The IRON AGE
November 28, 1957 A Chilton Publication The National Metalworking Weekly

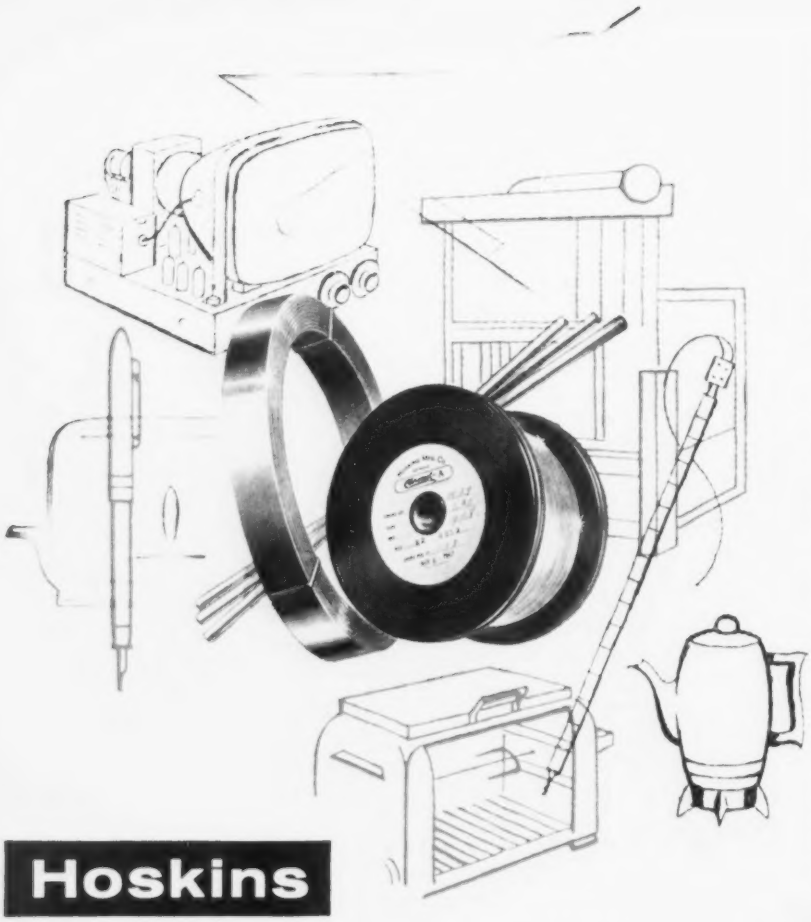
Congressman Clarence J. Brown

Get Government Out of Private Business P. 39

Business Booms For Production Warehouses– P. 44

Electronic Unit Controls Quenching – P. 79

Digest of the Week P. 2-3



ALLOY 815-R: A new iron-chromium-aluminum alloy developed especially for use on precision resistor applications. Possesses high resistivity and low temperature coefficient of resistance, plus high strength, excellent ductility, and stability over a wide temperature range.

CHROMEL-C: A 60-16 nickel-chromium-iron alloy widely used in small heating appliances and cold resistors where high resistances are required within limited space. Its stability and uniformity minimize design variables, permit more efficient production of better units at lower cost.

CHROMEL-ALUMEL: The most accurate and most durable base metal thermocouple alloys ever developed. Made exclusively by Hoskins, they are the accepted standards for controlling heat treating operations up to 2300°F. and for measuring temperatures of jet aircraft engines.

ALLOY 46: A gas-free nickel-iron alloy developed especially for use as a terminal material for power resistor units. It is readily "wetted" by enamel to produce a good bond, and its coefficient of expansion is very similar to that of enamels used for such applications.

CHROMEL-D: A time proven low nickel heating element alloy for controlled atmosphere furnace applications. Highly resistant to sulphur attack and preferential intergranular oxidation, it gives long-life service in the critical temperature range between 1500° and 1800°F.

Hoskins

Custom-Quality ALLOYS

Wire, ribbon, rod and strip for electrical resistance, thermo-electric and mechanical-purpose applications

When it comes to developing and producing custom quality alloys for electrical resistance, thermo-electric, and specialized mechanical purpose applications, you'll find that Hoskins has what it takes to meet your most critical requirements. Complete metallurgical research and development facilities, for one thing. Modern melting and processing equipment, for another. More important, though, is an abundance of human talent . . . people who have the experience, the know-how, and a sincere desire to deliver exactly what you want when and where you want it. *Try them and see!*

Life in a Vacuum—The special vacuum atmosphere life-test equipment shown above was designed and built by Hoskins for use in developing new heating element alloys which will give improved performance and dependable, long-life service in vacuum atmosphere heat treating equipment.

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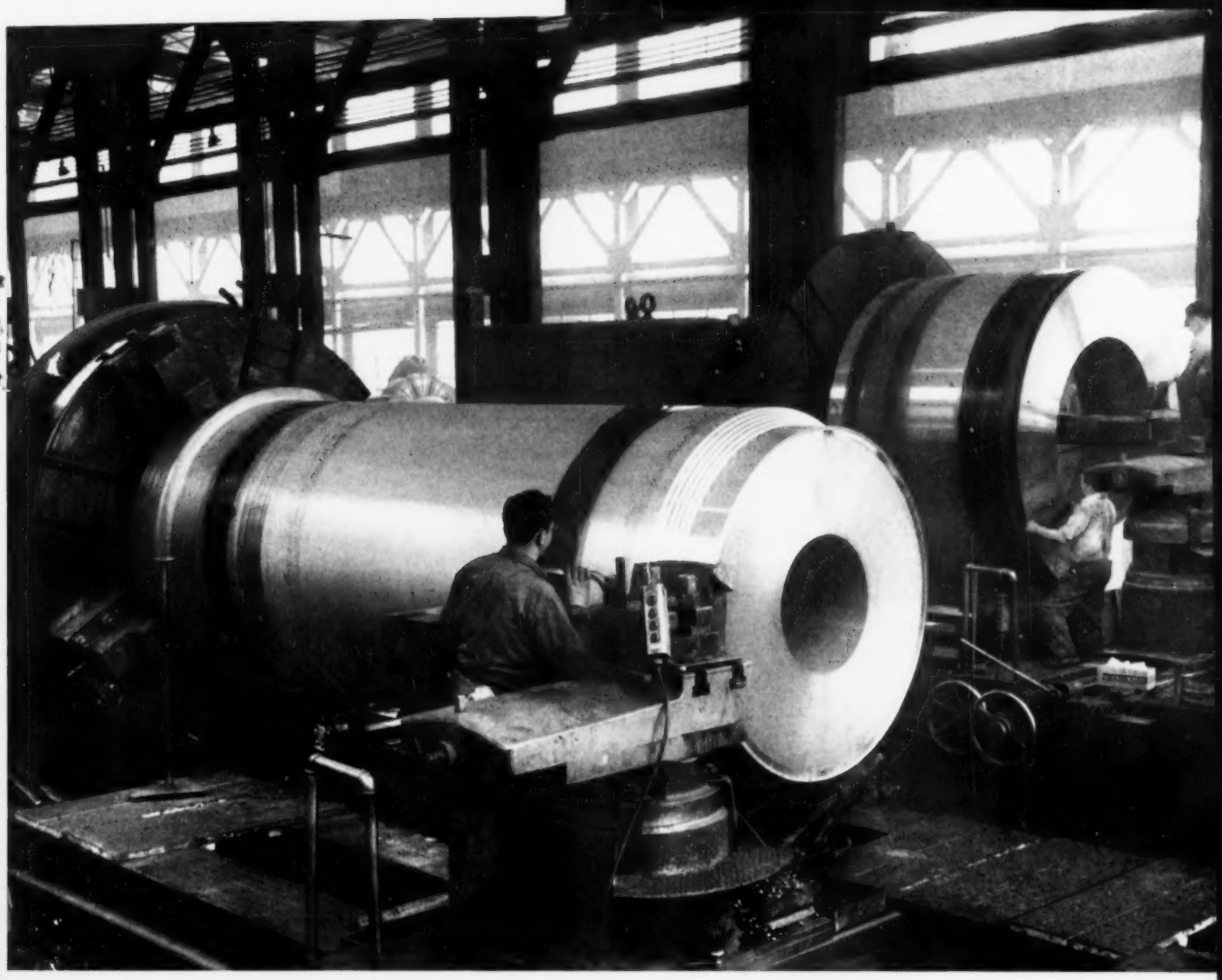
IRON AGE



Here's where the Heavyweights Shape Up

This is the No. 8 Machine Shop of our Bethlehem, Pa., plant—a shop that has seen some of the world's heaviest forgings come and go. Here giant forged parts are machined to precise dimensions, checked and rechecked, groomed and pampered.

The two cylinders in the photograph are typical Bethlehem press forgings of the heavyweight class. The one in the foreground is the main cylinder for a 3500-ton extrusion press. It has an overall length of approximately 15 ft and an OD of 6 ft 1 in. It weighs 66 tons. Its squat neighbor in the background, shorter and several tons lighter, is intended for another type of press.

Forgings of this kind always take weeks to produce. The making of the steel, the forging, the heating and cooling, the slow, careful machining—all are steps demanding the highest technical skills.

But not all Bethlehem skills are reserved for the making of heavy-tonnage items. Bethlehem shops produce every size and type of steel forging ever required—right down to the midgets weighing only a pound or so. When you are next in the market, by all means give us a call.

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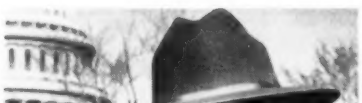
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



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Indexed in the Industrial Arts Index and the Engineering Index.

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The IRON AGE

November 28, 1957—Vol. 180, No. 22

Digest of the Week in

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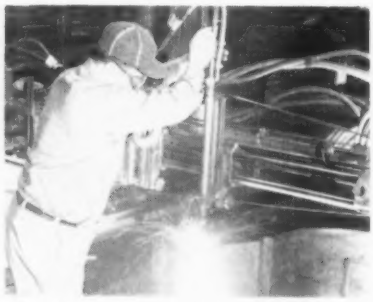
ROADBUILDING

Finally Getting Started—Snags at the planning level caused delays in the federal roadbuilding program. Now it seems ready to go. About 1500 miles of interstate highway will be built in 1958. P. 43

PRODUCTION WAREHOUSES

Business is Booming—More customers are being sold on the idea of warehouses doing their slitting,



shearing, burning, and bending. They find the services save them money on equipment and production costs. P. 44

T-SHAPED INGOTS

Definite Advantages—Ingots weighing 1500 lb are chill cast in T-shape by Aluminium Ltd. New shape aids handling and melting. Storage space is cut by 80 pct.

SCRAP LOSS

Is Yours Too High? — Special government study provides first industry-wide yardstick on scrap gen-

Metalworking

GOVERNMENT IN BUSINESS: Congressman Clarence Brown is an outspoken critic of government competition with private business. He outlines the extent of government business activities, shows why they are costly to the taxpayer. P. 39

eration by metalworking. Survey covers iron and steel, copper-base, and aluminum scrap. P. 48

LOOK AHEAD

Missile Age — Business thinking apparently is lagging behind world events. Businessmen are slow to realize the implications of the new missile program. Short-term problems of the current decline take precedence. P. 55

FEATURE ARTICLES

QUENCH-CRACKING

Reduce With Electronics—An ingenious approach to the problem of quench-cracking of steels is to utilize changes in magnetic permeability. A new signaller detects such changes through an electronic coil immersed in the quench tank. It's a device that can reduce or eliminate cracking. P. 79

BUILDING BLOCK LINE

For Many Shaft Sizes—A quick-change modular line, designed for crankshafts, adapts to a variety of diameters and sizes. Capital investment is a third less. Manpower and tool costs are halved, but biggest savings are in retooling. P. 82

ULTRASONIC WELDER

For Production Jobs—The combination of low pressures and vibratory energy makes a strong metallurgical bond. A new portable ultrasonic welding unit proves practical for joining thin electrical conductors. It can weld aluminum in thicknesses up to 0.012 in. Since there's no grain growth, fatigue resistance should compare favorably with that of base metals. P. 86

WAREHOUSE AID

For Coil Users—It's a new customer service offered by warehouses: Rerolling coil stock to specified thicknesses for quick delivery in small quantities. Behind the service is a new ac-type mill drive that cuts cost. P. 88

CYANIDE WASTES

Safe Disposal — Cyanide wastes from copper and zinc plating operations have to be rendered harmless. Oldsmobile's Lansing, Mich., plants have efficient routine in disposing of both liquid and solid wastes. P. 92

MARKETS & PRICES

FOREIGN CARS

Imports Continue Growing — Most U. S. automakers have been well prepared for the foreign-car invasion. Some have their own small cars. Others have tie-ins with European firms. P. 56

FARWEST STEEL BUYING

Heads for a Record—Shipments to steel users in the seven Farwestern states should hit a record seven million tons this year. Major consumers are fabricators, railroads, manufacturers, oil companies, and warehouses. P. 63

AUTOMATIC DRILLER

Replaces Three Tools — A new Barnes tape-controlled drill will do the work of three units with direct labor savings of 75 pct. The tool is used for multi-holed boring on jet engine compressor casings. P. 65

CHIPS ARE DOWN

Steel Sales Battle—Steel salesmen are getting their baptism of fire. Order-taking is a thing of the past. Even the top brass is out beating the bushes for orders as market weakens. P. 111

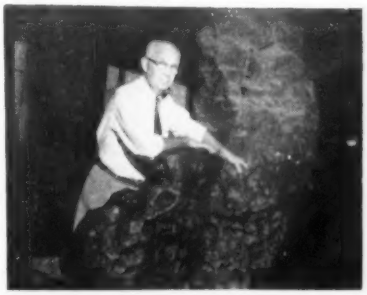
GRAY IRON FOUNDERS

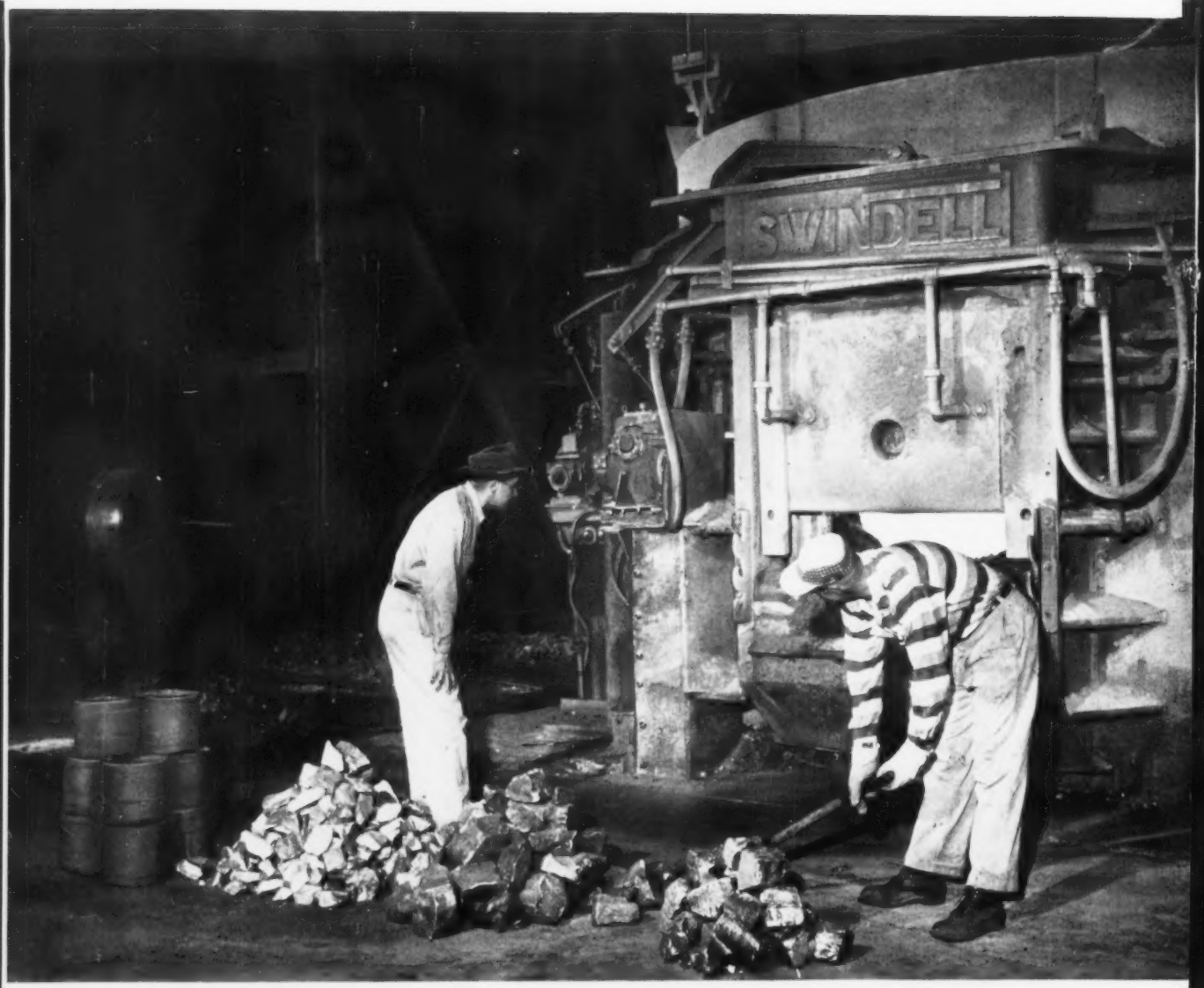
Want More Job Data—Foundrymen are asking customers for more information about product requirements. They point out the result is a better, lower cost casting. P. 112

NEXT WEEK

METEORITES

Stirring New Interest—Do meteorites hold the answer to the "re-entry problem?" Next week, E. P. Henderson, associate curator, U. S. National Museum, will discuss the metallurgy of these falling stars and their contribution to missile studies.





TUBING PERFORMANCE and WORKABILITY BEGIN with the MELTING OF STEEL

Tensile strength, corrosion resistance, resistance to "creep" at elevated temperatures and reaction to heat treatment are only a few of the mechanical and physical characteristics of a steel which are controlled by chemical composition. In addition to analysis, "melting practice" controls such factors as the cleanliness of the steel, its grain size and its hot workability.

Chuck Connor, melter and *Bob Schriner, first helper* are shown making "additions" during the melting of a heat of alloy steel in one of B&W's electric melting furnaces. They know that what they add, and when and how they add it during the melting cycle helps make B&W Seamless Tubing easier for you to fabricate and gives the tubing optimum service life.

Years of experience and attention to detail and the coordinated efforts of the entire team of B&W technicians, furnace operators, metallurgists, engineers and chemists help make the name "B&W" the hallmark of tubing quality. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pa.

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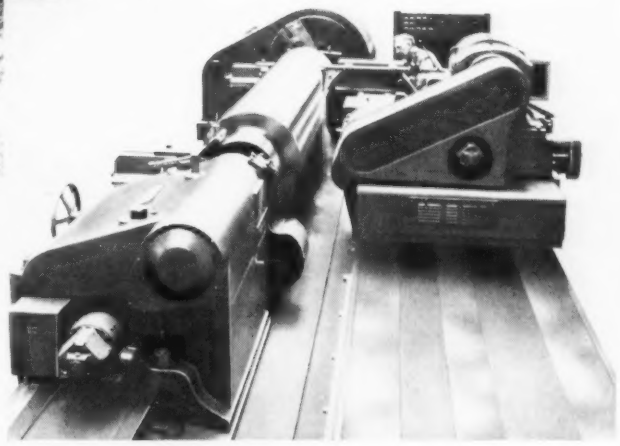

THE MEANEST PROBLEMS are his meat in a field where it takes a microscope to spot a mistake and half a lifetime of solid, practical experience to know what to do about it.

HAROLD M. "BUN" WALKER gained that experience during 18 years with Jones & Laughlin, Allegheny Ludlum, U. S. Steel . . . 8 more with Bay State in the Pittsburgh area. His field research plus Bay State's lab research, manufacturing techniques and sales engineering have built Bay State's reputation as a major source of supply for roll-grinding wheels . . . all bonds: shellac, resinoid and vitrified.

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What's different about

Roll Up Your Sleeves There's Plenty Of Opportunity

We are in a rolling adjustment; that's what the experts tell us. This is semantics for a "tough time ahead." We are recapitulating and getting our direction. That calls for adjustments and corrections.

The stage immediately ahead may be painful to some, frustrating to others and hardly noticeable to a lucky few. Indulging in industrial self-pity won't do any good. Becoming panicky or un-intelligent in handling our problems over the next several months could be disastrous for us.

The short term ahead is a time of opportunity, a time for risk takers and those with a stout heart. It is for those who believe we are still in our industrial and scientific infancy.

This is a time of testing for timid, anxiety-racked and super-cautious businessmen. Of course it doesn't call for foolhardy acts. But realistically we must admit that many of us will be captive to our emotions and to our recall of past recessions. We will tend to hold tightly to what we have rather than to strike out for uncharted progress.

Because caution, ultra-conservative thinking and retrenchment may be in the ascendency we should resist with all our might such a "majority" viewpoint. This is not the time to fire people indiscriminately just to bring down costs. We should hire discriminately and change jobs around. We should reward good work now with upgradings; not with a frozen status quo.

New products, research, advertising, promotion and new ideas should have full sway now—not curtailment. With the tendency of many to crawl into their holes and pull the covers in after them, the opportunities for those who aren't so fainthearted will be abundant.

Of course each of us must answer to a "boss." But if we are timid and overly cautious and fail to make the most of our opportunities, we will have to answer to the same boss for not being on the ball.

Our country is growing. We are going to meet and defeat Communism's effort to encircle the globe. We are going to establish new industries and make current progress look like a snail's pace. Short stops like the current "pause" are only for getting our wind.

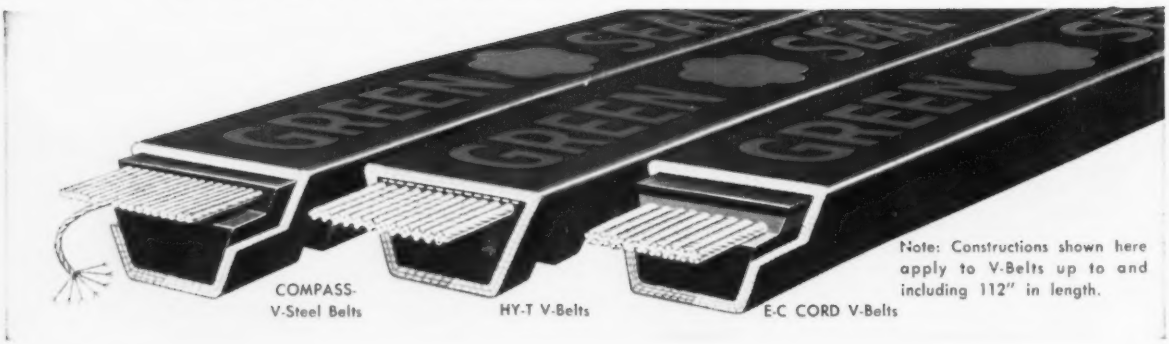
Let's roll up our sleeves and get going; the opportunities are unlimited—especially if we are not afraid to make hard decisions.

Tom Campbell

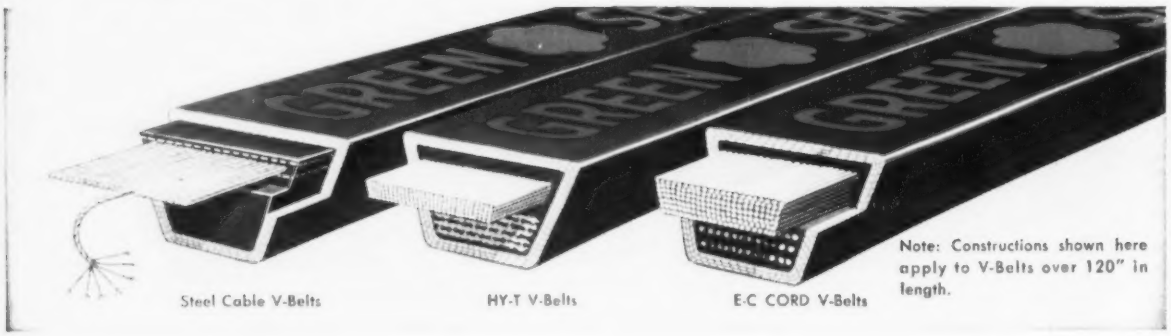
Editor-in-Chief

LETTERS FROM READERS

What's different about


COMPASS-
V-Steel Belts
HY-T V-Belts
E-C CORD V-Belts
Note: Constructions shown here apply to V-Belts up to and including 112" in length.

V-Belts with the Green Seal?



Plenty—when you're belting multiple drives. For that Green Seal certifies the dimensional stability of every belt that carries it. There's no surer guarantee that every belt in a set will match every other one—perfectly. And that they'll *stay* matched no matter how long you stock them before installation.

So the dimensional stability of Green Seal belts is solid protection against "loafing," slipping, stretching, scorching and other mismatching troubles. And most of the credit belongs to the belts' load carriers of airplane-type steel cables or Triple-Tempered (3-T) cord — Goodyear "exclusive" cord that's carefully tempered with Tension, Temperature and Time.

This unique 3-T process brings the synthetic cord to its point of greatest strength and stability. Result: the end of shrinkage in storage—plus greatest shock- and stretch-resistance in use. All of which assures you maximum, trouble-free horsepower hours at minimum cost. Why settle for less?

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THE GREATEST NAME IN RUBBER

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Please send me complete information on what makes V-Belts with the Green Seal different from any others made today.

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Company_____

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Alloys by Atomics?

Sir—Your "Metalworking in the Year 2000" article in the Oct. 24 issue proved very interesting.

One possibility which seems to have been neglected, however, is that by which metal alloys might be produced atomically.

Combine Elements — Through atomically combining the elements required to produce the alloy and arranging the resultant combination directly into the shape desired, steps such as smelting, rolling, casting, punching, stamping, and machining could be eliminated.

It has been said that what man can imagine, man can do, so who knows?—E. R. Farneti, Mfg. Supt., Athens Div. of General Time Corp., Athens, Georgia.

Delayed Payments

Sir—The writer very much enjoyed your editorial in the Oct. 17 issue, "Delayed Payments: Uncle Sam Is Delinquent."

Certainly am in accord with your views and you have expressed them so well.—F. M. Whipple, Pres. and Gen. Mgr., The Springfield Metallic Casket Co., Inc., Springfield, O.

Ease Problems

Sir—We would appreciate receiving two reprints of your March 7 article, "Put Idea Money Where It Counts."

We take this opportunity to congratulate you people on the fine job you are doing by publishing enlightening articles to make our problems easier.—W. B. Davis, Vice Pres., Portable Electric Tools, Inc., Chicago.

New Products

Sir—I have just finished reading your Oct. 17 article, "How to Plan New Products."

This article, in my opinion, provides a very helpful summary of the necessary planning and activity involved in the successful selection of new products, and should be particularly helpful to small firms. —E. W. Reisner, Chief, Production Assistance Div., Small Business Administration, Washington.

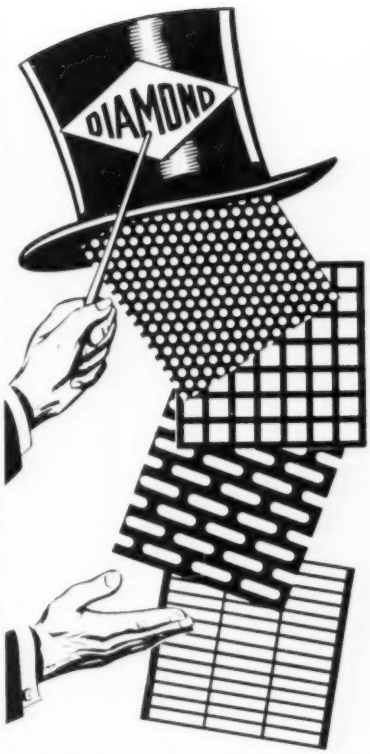
Sir—Will you please forward to us five reprints of the article, "How to Plan New Products?"

I have just finished reading this article and find it excellent. As soon as we receive the reprints we intend giving them to five of our key personnel.—D. L. Sewell, Mgr., Adv. Dept., Baker Oil Tools, Inc., Los Angeles.

Sir—We would be very pleased if you will send us two copies of your Survey Report to Management —No. 8 entitled "How to Plan New Products."

We follow the business data included in your magazine since it gives us much good data which helps us in analyzing the business situation.—W. S. Crouch, Mgr. Forecast Control and Scheduling Dept., Vickers Inc., Div. of Sperry Rand Corp., Administrative & Engineering Center, Detroit.

"You should have asked for a raise up here."



ANYTHING

IN

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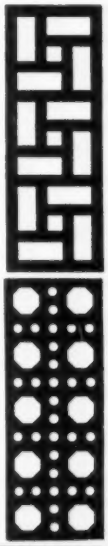
Write today, for a free copy of Catalog 39 and tell us about any present or prospective requirement. Our experienced engineers welcome opportunities to make money-saving suggestions without charge or obligation.



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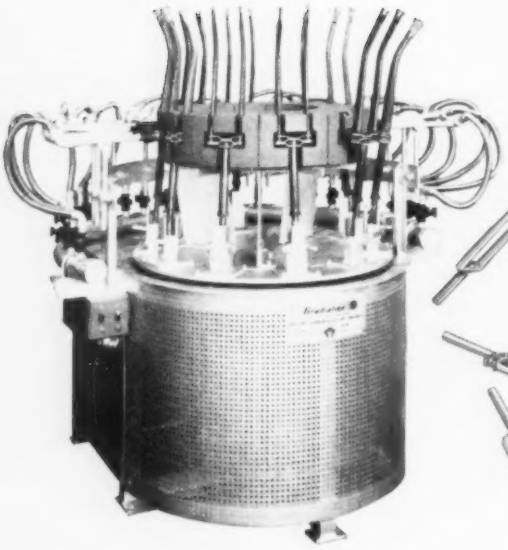


Two fork styles in all standard bicycle sizes are joined from eight steel components, on this new automatic Selas machine, by Westfield Manufacturing Co., Westfield, Mass. Controlled combustion and flame geometry bring the parts to brazing temperature of 1750°F in only 86 sec, using low-cost natural gas.

Columbia

NOW PRODUCES 250 FORKS PER HOUR ...WITH AUTOMATIC SELAS BRAZING

Selas brazing is not new to Westfield, where Columbia bicycle frames have been Selas-brazed for several years in a production operation. During this time, preplacing of brass filler material and automatic heating have limited dependence on operator skill, reduced material waste, and eliminated costly cleanup operations. With the installation of the new Selas machine, these advantages have been extended to include fork manufacture, also.

For full information on how Selas brazing can lower your costs and improve your production, too, send for new Bulletin "Production Brazing and Soldering," and reprint, "Mechanical Heating puts Brazing on the Production Line." Address Dept. 113.

SELAS CORPORATION OF AMERICA DRESHER, PENNSYLVANIA

Heat and Fluid Processing Engineers

DEVELOPMENT • DESIGN • CONSTRUCTION

FATIGUE CRACKS

Sputnik

In line with our policy of reporting Sputnik's significance to metalworking we should add a few choice items one of our agents picked up in Washington last week.

At the Office of Naval Research he learned a new verb form, "to be Sputniked." Its definition: Losing a race in which you are not running. He also learned there are three Sputniks. Sputnik I, Sputnik II and the top of the Pentagon which has been spinning around for the last month.

Old Newsman

When we ask "outside" authorities to do a story for The IRON AGE, it's usually with some misgivings.

After all, although we know they have something to say, they are not professional writers. Frequently it's a real editing job to put their stories in shape to conform with our editorial style and format. (And still not offend pride of authorship.)

But not so with this week's Special Report by Congressman Clarence J. Brown, who writes on

Good copy reader, too.

the provocative subject of why the government should get out of business.

Fathered Hoover Commission— It turns out that Congressman Brown is a newspaper publisher in his home state of Ohio, probably knows how to read copy with the best of them.

And Congressman Brown knows his subject. He drafted the legislation that led to the two Hoover Commissions and served on both groups. He knows as much as anyone about the government's infiltration into the areas of private business. If you turn to p. 39, you'll get some revelations of the extent government is involved in business, and why it is costly to both the government and the economy.

He states firmly his conviction that such activity by the government is a serious threat to free enterprise.

What Is a Man?

From distaffer Cleo Falk of Sacramento, Calif. we received a rebuttal to the chemical analysis of women published here a few columns ago. Here's what she thinks of "YOU MEN!":

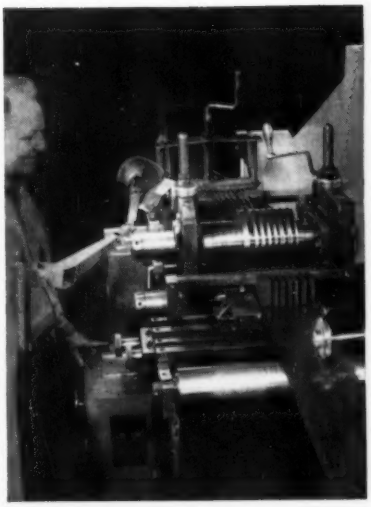
Symbol: Mn

Occurrence: Wherever the elements allow.

Physical Properties: Great attraction to a challenge—gold, silver, platinum, uranium, precious stones and the chemical, "Wo". Violent reaction if disturbed. Able to absorb great amounts of food matter—vegetable, mineral, or organic. Turns different colors and shades when placed beside any "Wo" speciman.

Uses: Debatable. Useful as a conversation piece when spoken of by the party of the first part. Useful in the distribution of wealth to obtain certain chemical specimens otherwise unobtainable.

Caution: Highly explosive if chemical reaction is ineffective or ignored. Not too complex, if understood by the handler. However, highly unpreditable when contact is made with a "Wo" of foreign substance and should be thermostated to remain below 212° F.



YODER SLITTERS Supply Varied Strip Widths for Tinnerman *Speed Nuts*

Tinnerman Products, Inc., Cleveland, Ohio, produces more than 10,000 different shapes and sizes of "SPEED NUT" brand fasteners for industry . . . many of them to special specifications.

To do this, Tinnerman uses slit steel strands ranging in width from ⅛" to 7½". To carry an inventory of the many strip widths required to meet normal and unusual demands would be almost impossible.

Tinnerman overcomes these inventory and supply problems by doing their own slitting on two Yoder slitters. This enables them to supply the plant with any strip size required from a relatively small inventory of 6" and 9" width purchased coils. In slitting narrow strands, such as these from small coils, a Yoder slitter may be profitable on a production as low as 25 tons per month.

Here is a fine example of how a small investment in Yoder slitting equipment greatly simplifies and speeds production while effecting important operating economies.

The saving made in time alone, reflects in better customer service through faster completion and delivery of finished products.

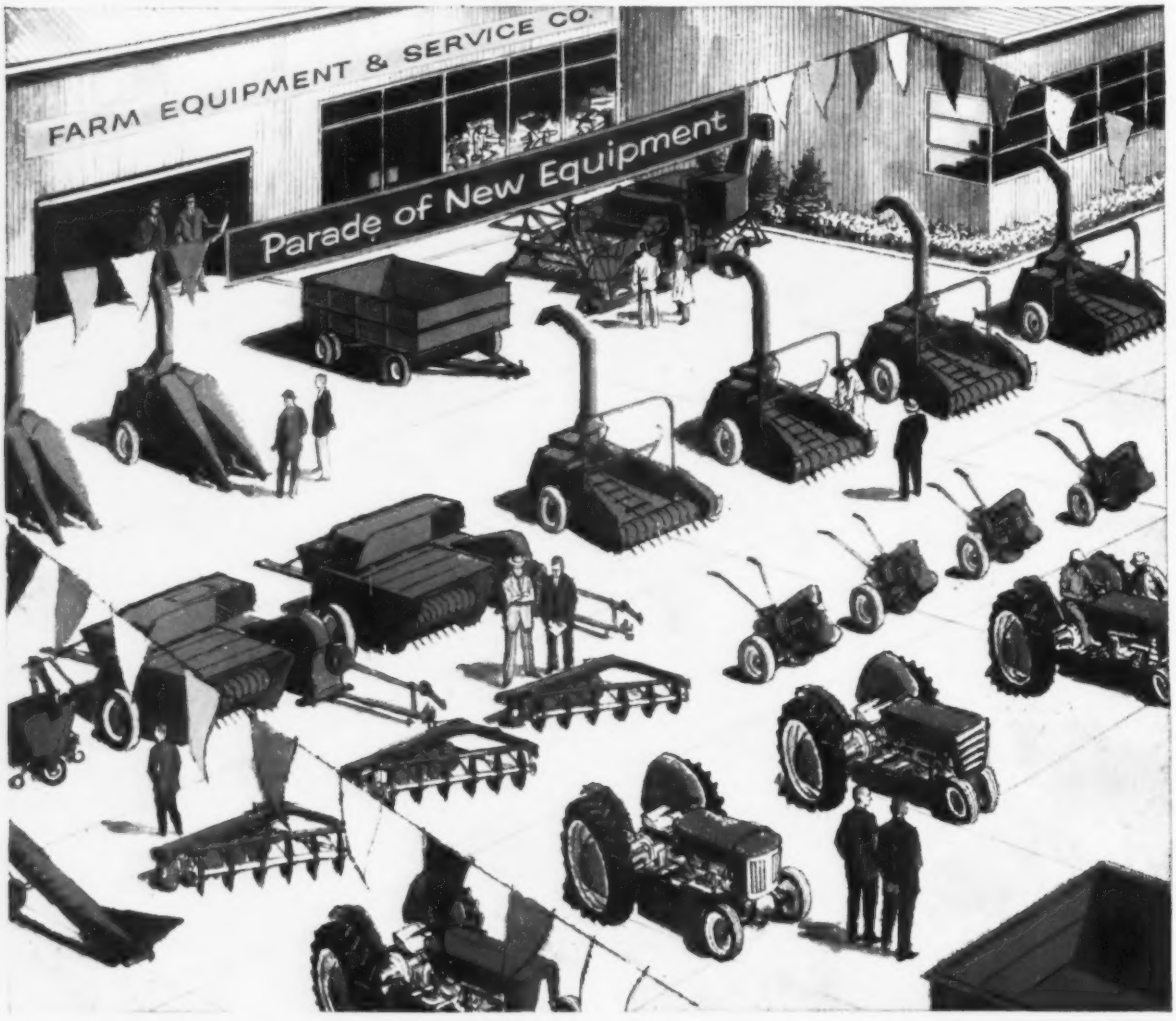
If your steel strip or sheet slitting requirements are as low as 100 tons per month or even less, a medium size Yoder slitter can be a very profitable investment for you. The Yoder line includes units of every size and capacity . . . of the most advanced engineering design. Send for the Yoder Slitter Book —a comprehensive text on the mechanics and economics of slitters and slitting line operation, with time studies, cost analyses and other valuable data. Write to:

THE YODER COMPANY
5510 Walworth Avenue • Cleveland 2, Ohio

ENGINEERING YODER MANUFACTURING **ROTARY SLITTING LINES**

STEEL SETS THE PACE in farm equipment...

Farm Equipment manufacturers used 1,082,459 tons of steel last year.
Steel is the **most used metal** in modern technology.



J & L sheet steel sets the pace in helping you control PRODUCT QUALITY

As an integrated company, Jones & Laughlin controls quality from iron ore through every production operation. Rigid quality control of J&L sheet and strip steel assures formability, uniformity and top drawing qualities to meet your most exacting specifications.

J&L sheet and strip are supplied in hot or cold rolled coils and cut lengths, in carbon grades, in widths up to 90" dependent upon gage. This permits forming products in one piece, eliminating welds and permitting more modern styling. Wide widths can also be supplied in high tensile, low alloy grades where higher strength or reduction in section is required.

Write for complete information to Jones & Laughlin Steel Corporation, Dept. 403, Three Gateway Center, Pittsburgh 30, Pennsylvania, or call your local J&L district office.

STEEL

Jones & Laughlin

...a great name in steel

EXHIBITS, MEETINGS

Exposition of Chemical Industries—Dec. 2-6, New York Coliseum. (International Exposition Co., 480 Lexington Ave., N. Y. 17.)

Third Annual National Construction Industry Conference on Creative Trends in Structural Design—Dec. 4-5, Congress Hotel, Chicago. (Armour Research Foundation of Illinois Institute of Technology, 10 W. 35th St., Chicago 16.)

Plant Management and Engineering Show—Jan. 27-30, 1958, International Amphitheatre, Chicago.

DECEMBER

American Society of Mechanical Engineers—Annual meeting, Dec. 1-6, Statler Hotel, New York. Society headquarters, 29 W. 39th St., New York 18.

Electric Overhead Crane Institute—Annual meeting, Dec. 3, Statler Hotel, Washington, D. C. Society headquarters, One Thomas Circle, Washington 5, D. C.

American Institute of Mining, Metallurgical, and Petroleum Engineers—Fifteenth annual conference on electric furnace steel, Dec. 4-6 Penn-Sheraton Hotel, Pittsburgh. Society headquarters, 29 West 39th St., New York 18.

Building Research Institute—Conference on adhesives and sealants in building, Dec. 4-6, Shoreham Hotel, Washington. Society headquarters, 2101 Constitution Ave., Washington 25.

National Assn. of Manufacturers—Annual meeting, Dec. 5-7, Waldorf-Astoria, New York. Society headquarters, Two East 48th St., New York.

American Institute of Chemical Engineers—Annual meeting, Dec. 8-11, Conrad Hilton Hotel, Chicago. Society headquarters, 25 W. 45th St., New York.

IRE, ACM, AIEE—1957 Eastern

(Continued on P. 16)

an ounce of prevention!

It pays to periodically check the "health" of your blast-cleaning operation to prevent costs from creeping up. You may not be doing as well as say, a year ago. A check on abrasive prices (some have increased more than others), on abrasive consumption, on tonnage cleaned and on cost of replacement parts, will tell.

Such a check is easy to make using simple forms we supply. A sample set will be sent you on request.

One thing sure — if your operation is "ailing," Malleabrasive will cure, as it has in hundreds of other plants.

Competent service personnel available without obligation.

Sold by Pangborn Corporation, and by leading distributors of foundry supplies from coast to coast.

MALLEABRASIVE

THE GLOBE STEEL ABRASIVE CO., MANSFIELD, OHIO ®

1907—Fiftieth Anniversary—1957

MEN WHO BUY STEEL SAY THIS:

"Steel Service Centers help us avoid excessive production costs"

"Steel Service Centers, as we know them today, are economically necessary to us in maintaining *maximum productivity* throughout the Corporation.

"For instance many of our products, particularly in the electrical appliance area, are subject to variable customer needs which quickly affect the demand for them. Our productive facilities must be adaptable to those variations—many of which cannot possibly be anticipated.

"Steel for these quick changes must be available—at the right time—in sufficient quantity—to the exact specification. If it isn't—production continuity is interrupted and our costs are instantly and disproportionately affected. In return, Steel Service Centers are entitled to a reasonable service charge."

Call in your Steel Service Center representative. Discuss with him the advantages of using his large, varied steel stocks . . . his efficient cutting and handling equipment . . . his fast delivery service. You can be sure, like Westinghouse, that your plant's productivity can be materially increased—and costs reduced. AMERICAN STEEL WAREHOUSE ASSOCIATION, INC., 540 Terminal Tower, Cleveland 13, Ohio.

A. M. Kennedy, Jr., Vice President, Purchases and Traffic
Westinghouse Electric Corporation

YOUR STEEL SERVICE CENTER

a NEW protective coating
for the
NEW high tensile steels

Zincilate 410

Zincilate 410 meets all requirements of Spec. MIL-P-26915 (USAF)

PREVENTS HYDROGEN EMBRITTLEMENT

REQUIRES NO COSTLY PLATING EQUIPMENT

NO LIMITATION IN SIZE OR SHAPE OF PARTS TO BE COATED

The tremendous speeds being achieved by modern aircraft have created a whole new set of design engineering problems. New steel alloys, heat treated to secure higher tensile strengths, had to be developed to withstand the heat generated by extremely high speeds, and to resist the shock of high speed landings.

These completely new high tensile steels require a completely new type of protective coating. Being subject to even greater hydrogen embrittlement than ordinary steels when cadmium plated, these new alloys require Zincilate 410, a protective coating that eliminates all traces of hydrogen embrittlement.

Zincilate 410 (one of several Zincilate formulations) provides other outstanding advantages over outmoded protection methods. Zincilate 410 will increase productive output because the controlled time cycle and size limitations of plating are eliminated. Conventional painting equipment is used to spray, dip or brush Zincilate 410, thus no more costly plating equipment. Zincilate 410 can be applied in the field, without dismantling the damaged part for return to the plating plant. And you can apply Zincilate 410 in your own plant, saving more time and money.

If your product is now being cadmium plated, all these advantages can be yours by simply using Zincilate 410. You may be surprised by the first cost, but you'll be amazed by the savings, which are far greater. Why not outline your coating problem now, on your company letterhead please, so we can tell you frankly what Zincilate 410 can do for you?

Zincilate

INDUSTRIAL METAL PROTECTIVES, INC., 402 HOMESTEAD AVE., DAYTON 8, OHIO

EXHIBITS, MEETINGS

(Continued from P. 13)

joint computer conference and exhibit, Dec. 9-13, Sheraton - Park Hotel, Washington, D. C. Information: IBM Corp., 1220 Nineteenth St., N. W., Washington, D. C.

The Material Handling Institute—Annual meeting, Dec. 10-11, Biltmore Hotel, New York. Society headquarters, One Gateway Center, Pittsburgh.

Society of the Plastics Industry, Inc.—Conference on vinyl products in the consumer field, Dec. 10-11, Hotel Commodore, New York. Society headquarters, 250 Park Ave., New York 17.

JANUARY

Society of Automotive Engineers, Inc.—Annual meeting, Jan. 13-17, Hotels Sheraton-Cadillac and Statler, Detroit. Society headquarters, 485 Lexington Ave., New York 17.

Malleable Founders' Society—Semi-annual meeting, Jan. 17, Hotel Cleveland, Cleveland. Society headquarters, 1800 Union Commerce Bldg., Cleveland.

Industrial Heating Equipment Assn.—Annual meeting, Jan. 27-28, Penn-Sheraton Hotel, Pittsburgh. Society headquarters, 1145 19th St., N. W., Washington 6, D. C.

FEBRUARY

Malleable Founders' Society—Technical and operating conference, Feb. 6-7, Wade Park Manor, Cleveland. Society headquarters, 1800 Union Commerce Bldg., Cleveland.

American Society for Quality Control—Annual conference on management by exception, Feb. 7-8, Carter Hotel, Cleveland. Information: B. F. Goodrich Chemical Co., 3135 Euclid Ave., Cleveland.

American Institute of Mining, Metallurgical & Petroleum Engineers—Annual meeting, Feb. 16-20, Hotels Statler and Sheraton-McAlpin, New York. Society headquarters, 29 W. 39th St., New York.

USS "T-1" Steel reduces weight of lift truck carriage assembly by 66%

INCREASES PAY LOAD PROPORTIONATELY

THE YARDLIFT 350®, manufactured by Ross Carrier Division of Clark Equipment Company, is designed to handle heavy materials on uneven ground. It has a lifting capacity of 35,000 pounds. Many vital strength members of the lifting mechanism are fabricated of USS "T-1" Steel. The reason is elementary: in fork-truck design every extra pound of mechanism forward of the front wheels reduces the machine's load capacity.

According to Clark design computations, the YARDLIFT 350's carriage assembly, if made of structural carbon steel, would have weighed nearly 3 times as much as the "T-1" Steel assembly to obtain the same capacity. And it would have been 3 times bulkier. USS "T-1" Steel, in other words, permitted maximum load capacity at *one-third* the weight and size . . . and increased pay load substantially.

The secret is USS "T-1" Steel's 90,000 psi yield point, nearly 3 times that of structural carbon steel. It is this strength that helped make the YARDLIFT 350 possible. And USS "T-1" Steel's high impact resistance and toughness, even at sub-zero temperatures, enable the YARDLIFT 350 to withstand the jolts and jars of rough yard work even in the severest winter weather.

Why don't you take advantage of the unique combination of strength and toughness that USS "T-1" Steel has to offer? It may be the most economical steel you can use. It certainly is at Clark because *many lift trucks now on their drawing boards incorporate USS "T-1" Steel.*

• • •

Our new catalog—USS "T-1"—is complete with technical information and offers many practical suggestions for its use that can save you money. For your free copy, write United States Steel Corporation, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

USS "T-1" CONSTRUCTIONAL ALLOY STEEL

USS and "T-1" are registered trademarks

UNITED STATES STEEL

United States Steel Corporation, Pittsburgh · Columbia Geneva Steel Division, San Francisco · Tennessee Coal & Iron Division, Fairfield, Ala.
United States Steel Supply Division, Warehouse Distributors, Coast to Coast
United States Steel Export Company, New York

"No forging ever had a more

says **John A. Lynch,** *United States Steel Inspector, Homestead Forgings Division*

THAT USS Quality Forging in the picture will serve in one of the most critical applications you can imagine. It will be the head for a nuclear reactor containing a deadly radioactive load under extremely high pressure and temperature.

The forging is made from a manganese-nickel-molybdenum steel. Its forged weight was about 48 tons, but it was machined to 13½ tons. The machining was a little tricky because the underside of the forging is concave, and the entire piece is tapered slightly towards the edges. It's about 17" thick in the center, 13" thick at the outer edges.

Inspector Lynch handled the extensive testing required for this forging, and few men are better qualified for the job. He has been a USS Inspector for over 20 years, and his father, John C. Lynch, was an Inspector for 30 years before he retired in 1943. This is fairly common in the Homestead Forgings Division . . . finding a son or grandson who is carrying on in some highly skilled activity.

This nuclear forging received the usual close examination for dimensional accuracy. In addition, tensile, impact, microscopic and magnetic particle tests, and *three* separate sonic examinations were made. Of course, these tests are

careful inspection"

common for large, quality forgings, but it takes a man like John Lynch to interpret the results.

No matter what kind of USS Quality Forging you buy, men like John Lynch do the actual work on it. Scour the world, and you won't find better forging men—and they have the steel and equipment to back them up.

Please mail inquiries or requests for our free 32-page booklet on USS Quality Forgings to United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS QUALITY FORGINGS

heavy machinery parts . . . carbon, alloy, stainless
forged steel rolls and back-up roll sleeves
electrical and water wheel shafts
specialty forgings of all types

USS

UNITED STATES STEEL

6 VITAL AREAS REPAIRED WITH LUMNITE gun-applied industrial concretes in blast furnace downcomers and dust separator, National Tube Div., U. S. Steel, National Works, McKeesport, Pa.

1. **Dust catcher,** spot repairs to brick lining
2. **Dust separator shell,** complete lining
3. **Inner core,** complete lining
4. **Elbows and piping,** lined for 65 lineal feet
5. **Downcomers,** gunited for 120° arc in pipe bottom
6. **Connections between uptakes and downcomers,** spot-repaired (two other connections gunited not shown)

Atlas LUMNITE* industrial concretes protect blast furnace "hot" spots

- Industrial concrete linings made with Lumnite cement will resist abrasion, corrosion and heat.
- Placement is fast and easy, by guniting, casting or troweling — service strength is reached in less than 24 hours.
- Outage is reduced to a minimum.

For maximum convenience, use Lumnite-made castables. These are packaged mixtures, ready for use. Just add water, mix and place. Made and distributed by leading manufacturers of refractories.

Write for your copy of the new "Lumnite Mortar Manual," describing gun-applied linings: Universal Atlas, 100 Park Avenue, New York 17, N. Y.

UNIVERSAL ATLAS CEMENTS

USS

*"LUMNITE" is the registered trademark of the calcium-aluminate cement manufactured by Universal Atlas Cement Company.

UNIVERSAL ATLAS CEMENT COMPANY – member of the industrial family that serves the nation – **UNITED STATES STEEL**

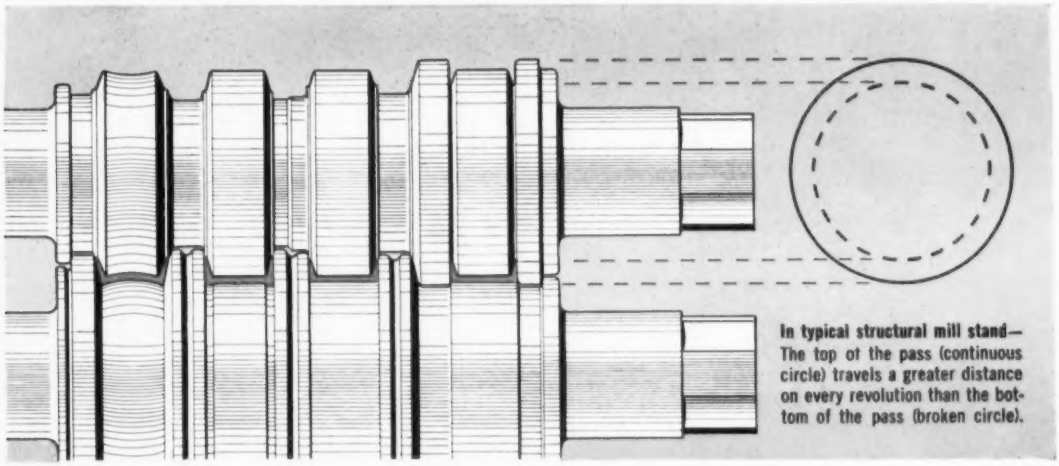
OFFICES: *Albany · Birmingham · Boston · Chicago · Dayton · Kansas City · Milwaukee · Minneapolis · New York · Philadelphia · Pittsburgh · St. Louis · Waco*

TIPS FROM A ROLL MAKER'S NOTEBOOK

MACKINTOSH-HEMPHILL DIVISION, E. W. BLISS COMPANY, Pittsburgh 3, Pennsylvania

Cast mill rolls • Johnston cinder pots • rotary tube straighteners • end-thrust bearings • heavy-duty lathes • steel and special alloy castings

You get your nickel's worth in structural rolls



In typical structural mill stand— The top of the pass (continuous circle) travels a greater distance on every revolution than the bottom of the pass (broken circle).

With the large rolls used in beam, channel and other structural mills, excessive side wear in the passes is probably the most common cause of short runs between redressings. The reason, naturally, is the variation in peripheral speed at various pass depths. For example, the top of a typical pass on a 26" diameter roll may travel as much as a foot more on each revolution than the bottom of the pass. The slippage that has to occur aggravates this side wear in the passes.

Thus, structural finishing rolls should be as hard as practical, with the hardness uniform from the surface in. While Mack-Hemp produces several types of rolls widely used in structural mills, the one which offers the best wearing properties—and the one we recommend for all large mills where wear is severe—is the nickel-alloy steel "M-H Midland Supermetal" roll.

The three virtues of nickel—The more carbon in steel, the higher its hardness can be raised by heat treatment. But, carbon also raises brittleness. Strength and resistance to shock and impact suffer.

However, as nickel is added, the strength of the steel increases. Thus, the introduction of nickel raises the permissable level of carbon, since the nickel counterbalances the embrittling effect of the carbon.

Because of its graphitizing property, nickel contributes two other virtues to the "Supermetal" roll. The graphite acts as a lubricant, reducing the rate of wear caused by the slippage in the pass. Secondly, the graphite formed due to the presence of nickel is very fine and well-dispersed, producing a structure that provides a smooth working surface.

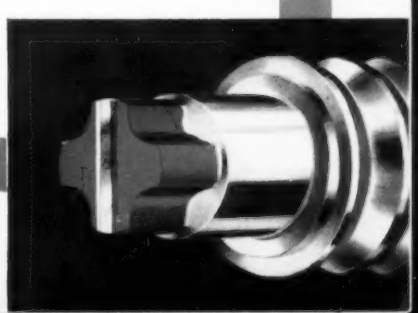
The greatest wear resistance—Because of these properties conferred by nickel, Mack-Hemp "Supermetal" represents the best solution yet found to the wear problem created by severe operating conditions in structural mills. However, several other Mack-Hemp roll compositions give excellent results where conditions are less severe. For more detailed information on this—or any other—problem of roll selection, telephone or write us today. There's no obligation.

MACKINTOSH-HEMPHILL

You get more tonnage from the rolls with the Striped Red Wabblers

Division of E. W. BLISS COMPANY

Presses, Rolling Mills, Special Machinery



Now in operation

Ore carrier docks at C&O's new 1191-foot pier at Newport News with a 19,000-ton cargo.

The three unloaders will empty the vessel between breakfast and supper time and clean out holds without auxiliary equipment aboard ship.

at Newport News, Va.

World's most modern ore unloading facility.

To handle an ever-increasing flow of ore imports by the steel and chemical industries, Chesapeake and Ohio has put into operation the world's most modern and efficient ore unloading facility at its great port of Newport News, Va. Incorporating the best features of American and European designs, the 8½ million dollar installation sets new standards of speed and flexibility for bulk cargo unloaders.

Moving on rails along a finger-type pier designed to accommodate the largest ore carriers afloat, the facility's three unloaders can work vessels on both sides of the pier simultaneously, or as many holds of a single ship. Several sizes of buckets, changeable in less than five minutes, are provided for different types of ore and vessel. Twin belt conveyors and car loading hoppers permit handling two types of ore at the same time without sacrifice of unloading speed. After electronic weighing, accurate to the pound, ore is loaded into thoroughly flushed out open top cars.

With an always ample car supply plus prompt delivery inland by C&O, this facility marks a new high in transportation service for ore importers. Ships now get faster turn-around as well as quick access at C&O's port of Newport News.

A giant bucket drops into the ship's hold to begin unloading at the rate of 18 tons every 45 seconds.

Ore is moved at 600 feet a minute on these conveyor belts to the carloading house.

Write for illustrated folder showing in detail the operation of C&O's new ore unloader.

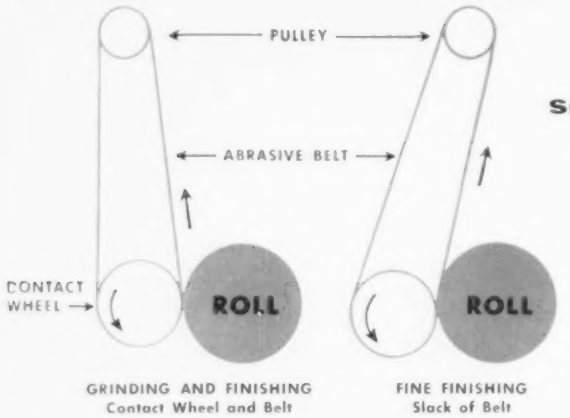
Chesapeake and Ohio Railway

WORLD COMMERCE DEPARTMENT, NEWPORT NEWS, VA.

World Commerce Dept. Offices: New York 7, N. Y., 233 Broadway • Chicago 4, Ill., 327 S. LaSalle Bldg
Detroit 26, Mich., 525 Lafayette Bldg. • Richmond 10, Va., 823 East Main St. • Stockholm, Sweden, Kungsgatan 7

CARBORUNDUM'S EXCLUSIVE ABRASIVE BELT METHODS

Reduce roll grinding and polishing time 50% to 80%



Simple belt attachments provide:

- Highest quality accuracy and finishes
- Stock removal rates exceeding all other methods
- Quick adaptability to standard grinding equipment

HERE'S PROOF

Typical grinding savings with abrasive belts

ON METAL ROLLS

Carborundum Installation No. 173

Carl G. Wiklander Company, Chicago, Illinois

- ROLL TYPE: Mild Steel Rotogravure Cylinder
- ROLL SIZE: 17.030" dia. x 152"
- Tolerance: ±.002"

Previous method required 14 to 15 hours to grind cylinder. Curtis RG2 and abrasive belts accomplish same job in 6 hours—*more than 50 per cent reduction in grinding time.*

ON RUBBER ROLLS

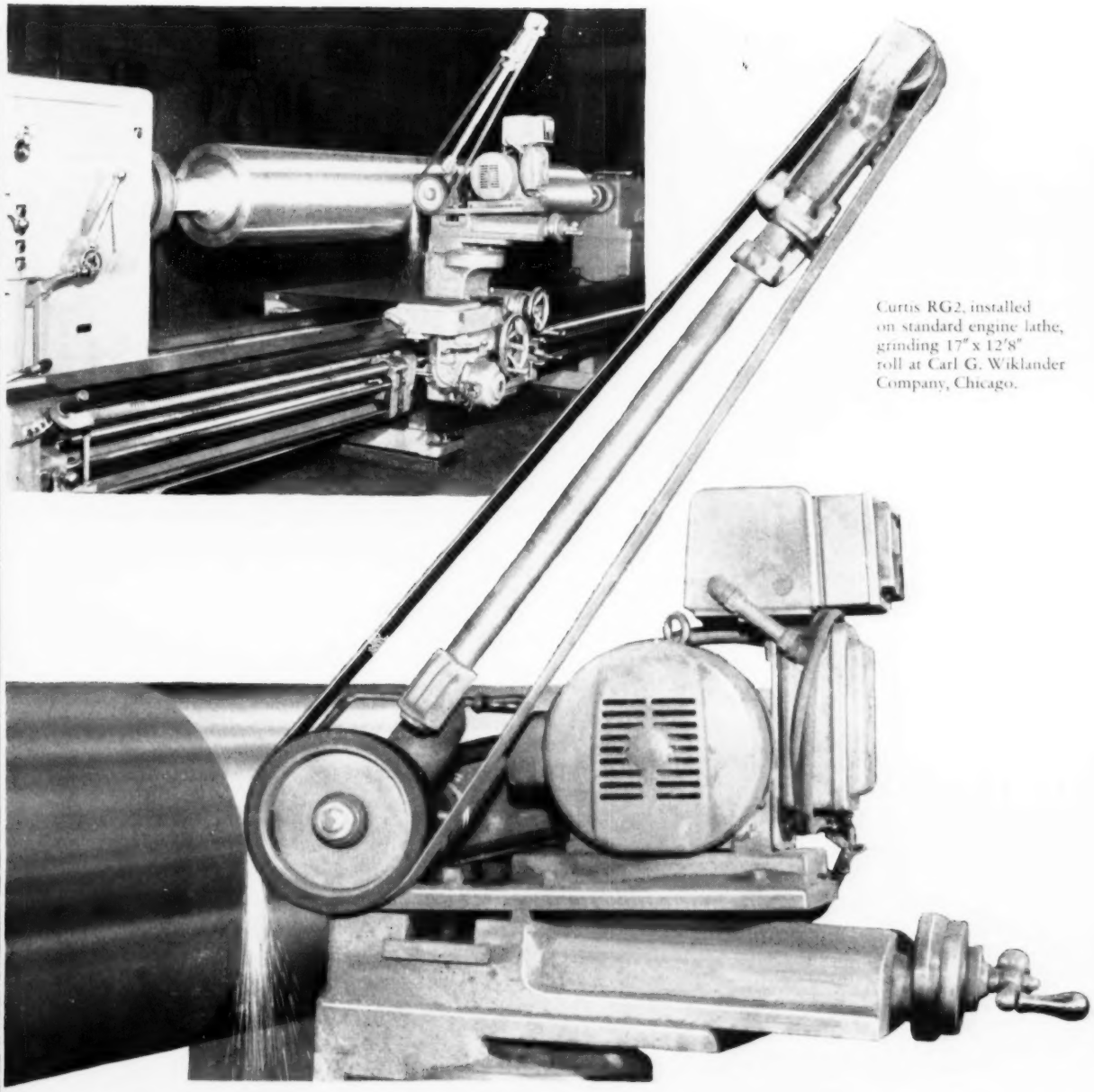
Carborundum Installation No. 87

Passaic Rubber Company, Clifton, New Jersey

This Company recovers and finishes all types of rubber rolls with varying durometers. Employing a Curtis RG2 roll grinding attachment, the following results are being obtained:

1. Grinding time reduced 80 per cent—belt removes up to 3/16" stock per single pass.
2. Finishes *better* than with previous method.
3. Tolerances: Concentricity .001, size .002 and taper .002.
4. Elimination of hand operations with slack of belt finishing.

Spring Maker Saves 75% of Storage Space with



Curtis RG2, installed on standard engine lathe, grinding 17" x 12'8" roll at Carl G. Wiklander Company, Chicago.

Substantial savings can *now* be realized in roll grinding operations with *abrasive belts*. The Carborundum Company after years of laboratory experiments and one full year of in-the-plant field tests, has proved conclusively that abrasive belt roll grinding is faster, equally or more accurate than any other method and produces unprecedented economies.

Carborundum's Coated Abrasive and Curtis Machine Divisions have developed abrasive belt attachments for standard roll grinding machines and also for engine lathe operations. The engineered and regular production application of these attachments has provided the following results: 50-80 per cent time savings on grinding and polishing steel, cast iron, brass, aluminum, copper and stainless rolls while maintaining the most exacting tolerances specified for all standard or special rolls; reduced labor and overhead costs; plus appreciable production savings with reduced downtime.

These abrasive belt roll grinding techniques have proved equally successful on rubber rolls of all durometers producing superior finishes without tear-out marks. Copper electric motor commutators are now also belt ground in less than half the time required in tool bit operations.

FOR SPECIFIC INFORMATION on adapting your present roll grinding equipment to abrasive belt grinding, call your Carborundum representative. He'll arrange for specialized engineering assistance. Or write, without obligation, directly to The Coated Abrasive Division, Department R.G., The Carborundum Company, Niagara Falls, New York. In Canada, write to, The Canadian Carborundum Company Ltd., Department R.G., Niagara Falls, Ontario.

Curtis Machines and Coated Abrasives by **CARBORUNDUM**

REGISTERED TRADEMARK

Republic Bar Carriers

Spring Maker Saves 75% of Storage Space with

COMPARISON PHOTOS show how 75% saving in floor space is achieved. At left is the Mather operation before Republic Bar Carriers. Materials were difficult to reach and handle. Inventory control expensive and difficult. Photo above shows neat rows of Republic Bar Carriers. The same amount of material is stacked in one-fourth the space. Length, width and height of carriers can be designed to meet your requirements for handling materials characterized by narrow dimensions.

REPUBLIC

REPUBLIC STEEL

World's Widest Range of Standard Steels

Republic Bar Carriers

GAINS AREA FOR PRODUCTION EQUIPMENT; IMPROVES INVENTORY CONTROL

When a manufacturer is able to reduce storage space requirements by 75%, there is sure to be an interesting story behind it. This one is still unfolding at the Toledo, Ohio, plant of Mather Spring Company, nationally known manufacturer of automotive springs and torsion bars.

Mather was faced with two major problems: (1) Lack of storage space for "in process" springs and materials; (2) Necessity for actually gaining floor space as production increases, to permit installation of new additional equipment.

Republic Materials Handling Engineers were contacted and in cooperation with Mather engineers made a thorough study of material flow, handling, and storage procedure. This study resulted in the design and fabrication by Republic's Pressed Steel Division of a modified version of the standard Republic P-135 Bar Carrier.

Equipped with tiering lugs and channel runners designed for four-way entry by fork-lift truck, the carriers are replacing a four-wheeled unit that Mather has been using. These older units cannot be tiered and consume valuable floor space. Frequent and expensive handling is required to reach desired material. Inventory control has been difficult.

Installation of Republic Bar Carriers has resulted in a 75% saving in floor space, according to Mather engineers. The space gained will be used for installation of new production equipment. And with materials tiered in neat, orderly rows, Mather is able to maintain a close and accurate check on inventory.

Mather will also enjoy future savings, in reduced handling and maintenance costs. Corrugated-steel construction of the bar carriers provides strength, assures long service life at lowest per-year-cost.

Need more space in your operation? A standard unit from Republic's broad line of materials handling equipment may provide the answer. Or you may require the design of a completely new unit. Either way, our engineers will help you. Contact your Republic materials handling representative. Or send us the coupon. There's no obligation.

STEEL

and Steel Products

IMPROVE HANDLING, STACKING AND PALLETIZING of bulky, uneven, odd-lot and fragile materials with Republic Steel Pallets and adjustable Pallet Racks. Tubular steel supports on racks adjust every six inches to handle palletized material of any height. Two-way entry permits loading and unloading from either side. Select single pallets from any level without restacking. Mail coupon for specifications and quotations.

GAIN STRENGTH AND SPACE for storing of heavy dies, tools, parts, etc., with Republic Wedge-Lock Steel Shelving. It provides maximum loading in minimum floor space. Wedge-Lock Steel Shelving is specifically designed for high stacking of enormous weights. Joints get tighter and stronger as more weight is applied. Yet it is completely flexible to meet changing space requirements. Wedge-Lock Steel Shelving, a product of Republic's Berger Division, assembles quickly and easily. The coupon will bring you more facts.

REPUBLIC STEEL CORPORATION
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☐ Send more information on Materials Handling Equipment:
☐ Have a Materials Handling Engineer call.
Send additional information on:
☐ Pallet Racks ☐ Wedge-Lock Steel Shelving

Name_____ Title_____
Company_____
Address_____
City_____ Zone____ State_____

Mfd. by
Braun Engineering Company,
Detroit, Mich.

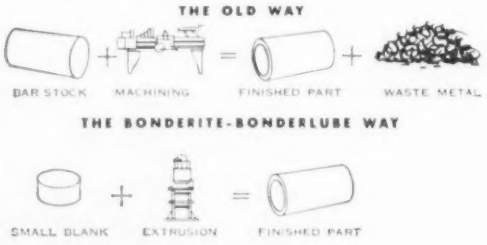
EXTRUDED...*and sold for less than the raw stock used to cost!*

Cold extrusion of steel means big reductions in material, machinery, and time. Frequently, as in the case of the automotive motor mount above, the part is made by cold extrusion for about the cost of the raw metal used in conventional methods.

More and more, manufacturers are turning to cold extrusion as a cost cutting, simplified method of making quality parts. Machining is cut to a bare minimum and scrap virtually disappears. "Impossible" jobs are being mass produced at high rates and a lot of the "impossibles" have become production runs only because of Bonderite and Bonderlube.

These two remarkable aids in cold extrusion make metal flow like magic. More severe deformations are possible. Tool and die life are multiplied. Rejected parts are few and far between. Production speeds are greatly increased. Smooth finishes are easily achieved and maintained.

The Parker cold forming staff can give you expert help in the technique of cold extrusion.

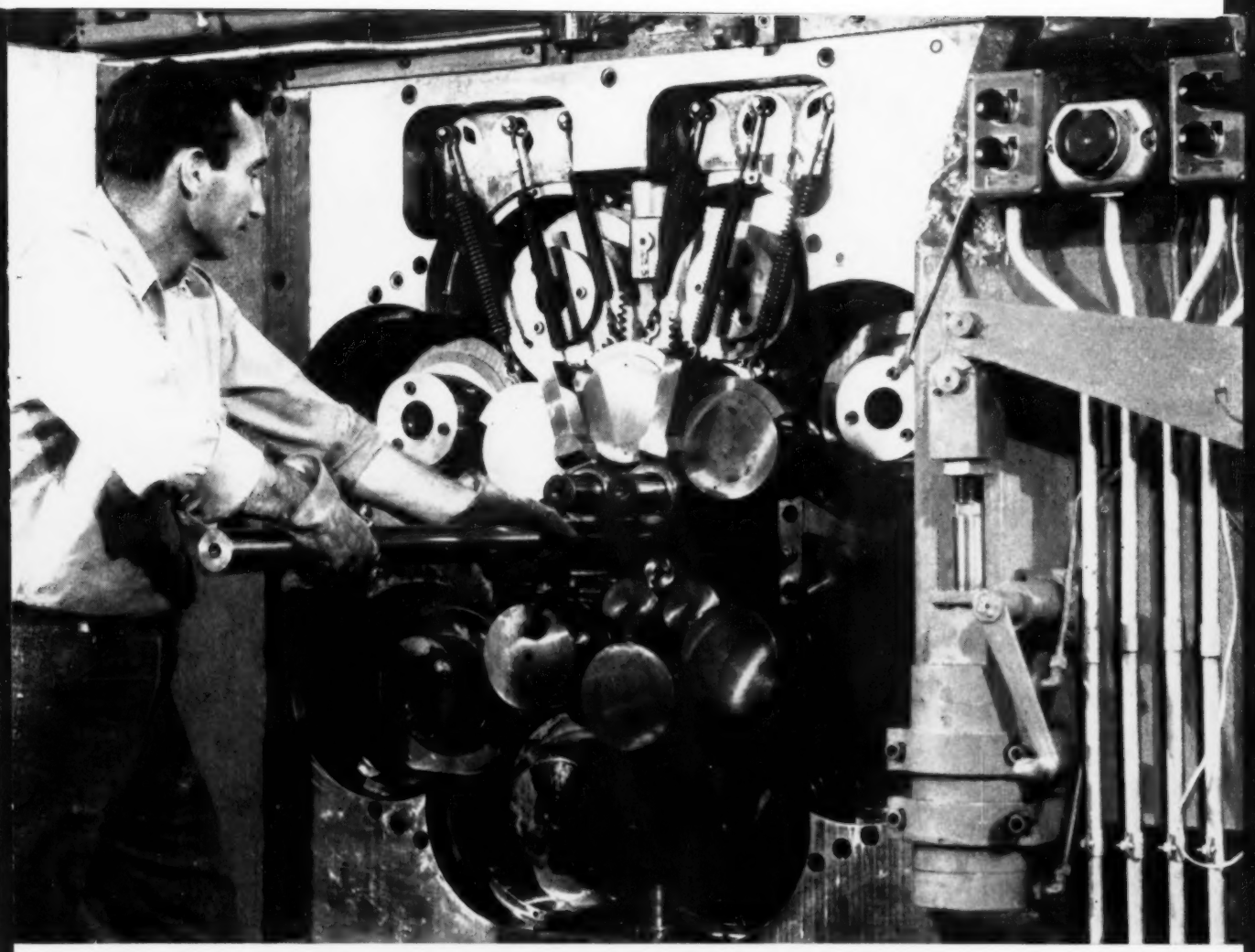


Since 1914— leader in the field

PARKER RUST PROOF COMPANY
2197 E. MILWAUKEE, DETROIT 11, MICHIGAN

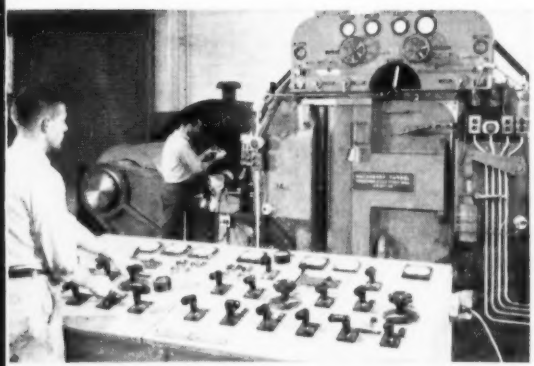
BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE	TROPICAL
corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces	heavy duty maintenance paints since 1883

**Bonderite, Bonderlube, Parco, Parco Lubrite—Reg. U.S. Pat. Off.*



Westinghouse drives and control help . . .

Eastern Stainless Steel Corporation increase production



Extensive experience enabled Westinghouse engineers to provide both unusual control accuracy and drive dependability required for this new 49" Sendzimir mill. The new mill demanded drives and control for high versatility and watch-like precision to produce a wider range of light-gauge stainless steel.

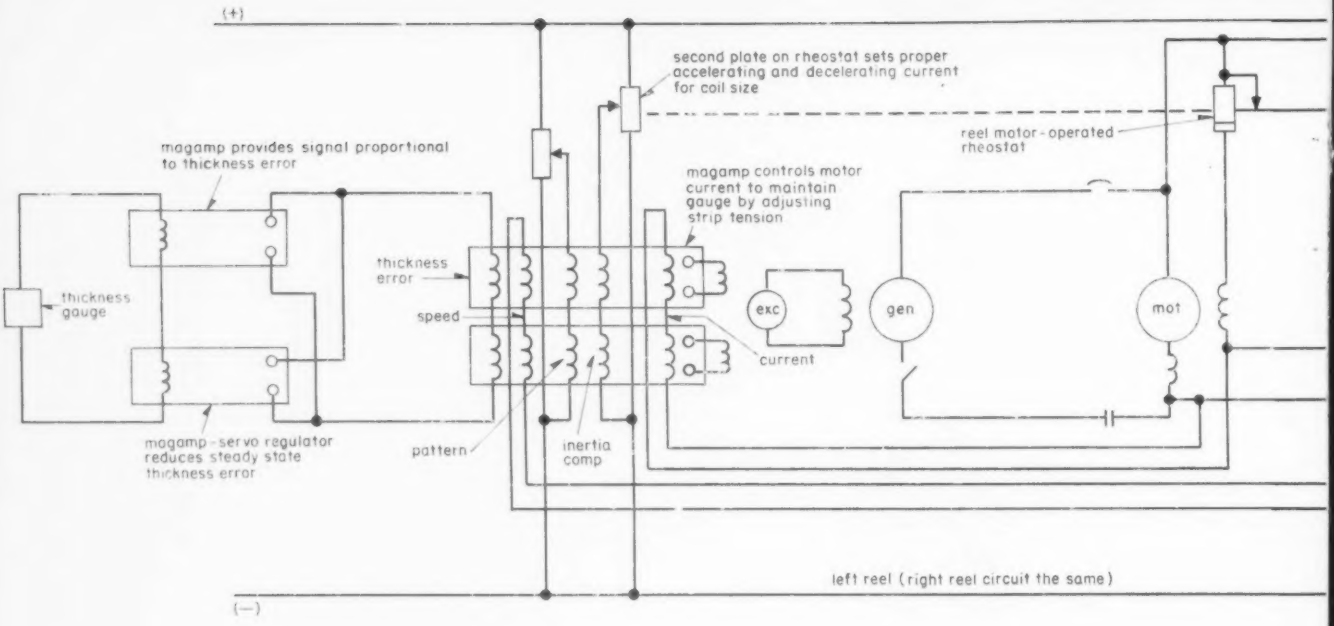
The reel motors are supplied by individual generators and are accurately controlled by Westinghouse Magamp* regulators for speeds up to 700 ft. min. Power is supplied by a 3125-kw M-G set to motors which total 3750 hp.

Today, developments in mill drives enable Westinghouse to help you gain closer tolerances with automatic control *this way* ▶

*Trademark MP-3059

Operating control is centrally located on this console.

YOU CAN BE SURE...IF IT'S Westinghouse



Increase strip accuracy to ± .0001″

. . . with Westinghouse automatic gauge control

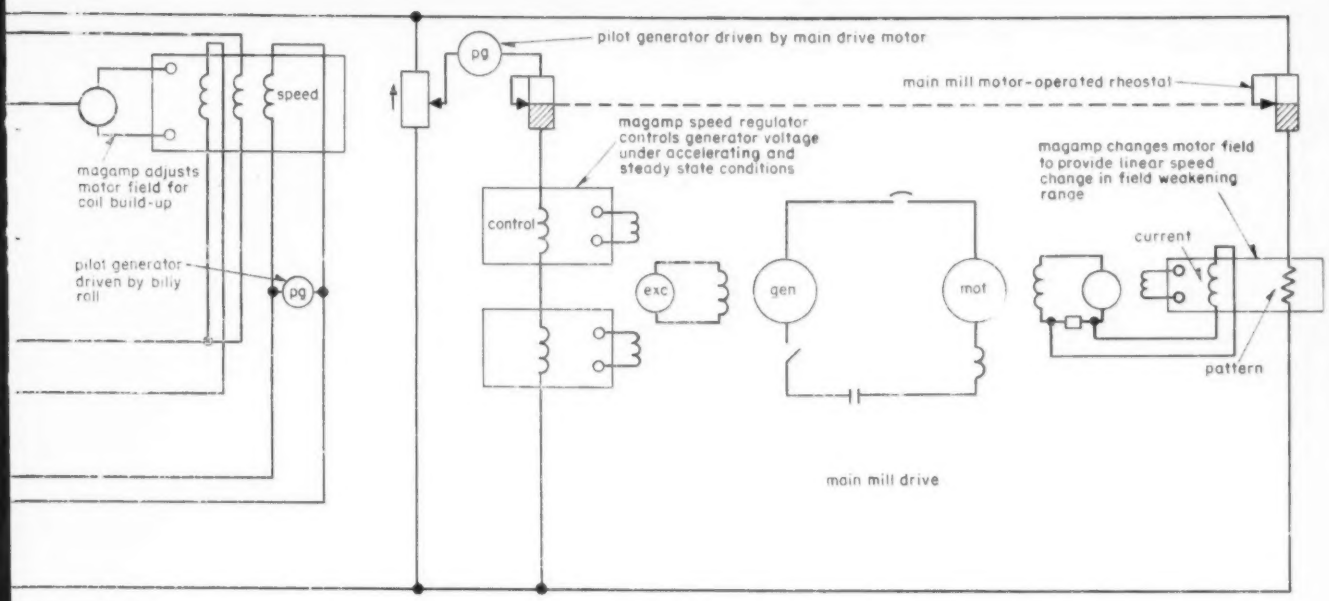
Increased accuracy and flexibility are engineered into Westinghouse drive systems for any single-stand, cold-reversing mill . . . such as shown above. Developments in automatic gauge control and Magamp regulator systems make it possible for you to maintain extremely close tolerance of ± .0001″. And, at the same time, you have ease of adjustment for quick change from one product to another. Here's how Westinghouse control and main drive equipment give consistant, high quality results:

Automatic gauge control circuit varies the strip tension to maintain uniform thickness of finished strip as measured by thickness gauge.

For mills equipped with regulating tensiometers, the signal from the tensiometer maintains constant tension by regulating the reel motor current. A tension rheostat furnishes the pattern field adjustment.

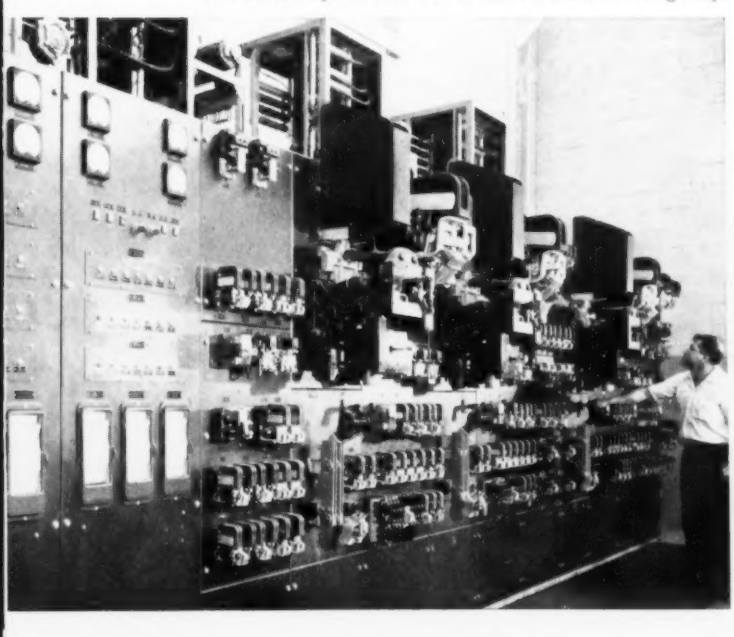
Magamp regulator system compensates for coil build-up by automatically regulating the speed of reel motors. Magamp's high amplification and extremely short response time assure accurate generator voltage control for optimum overall performance.

YOU CAN BE SURE... IF IT'S Westinghouse

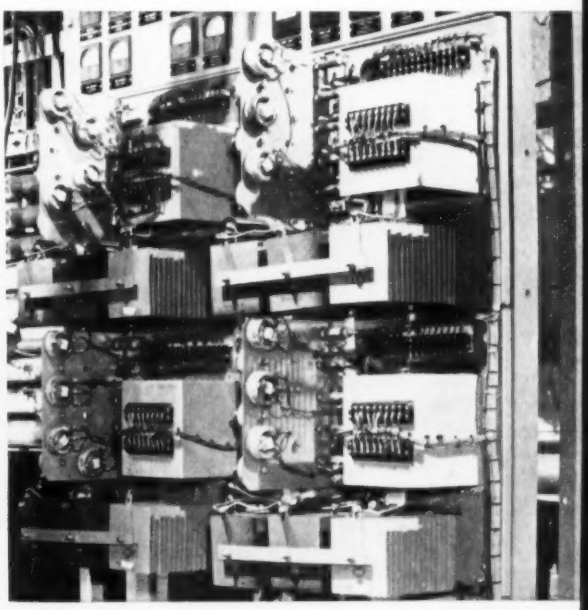

pilot generator driven by main drive motor
main mill motor-operated rheostat
magamp speed regulator controls generator voltage under accelerating and steady state conditions
magamp changes motor field to provide linear speed change in field weakening range
magamp adjusts motor field for coil build-up
pilot generator driven by billy roll
speed
pg
control
exc
gen
mot
current
pattern
main mill drive

Cold reversing mill system-diagram shows control that can be realized with Westinghouse motors and control components.

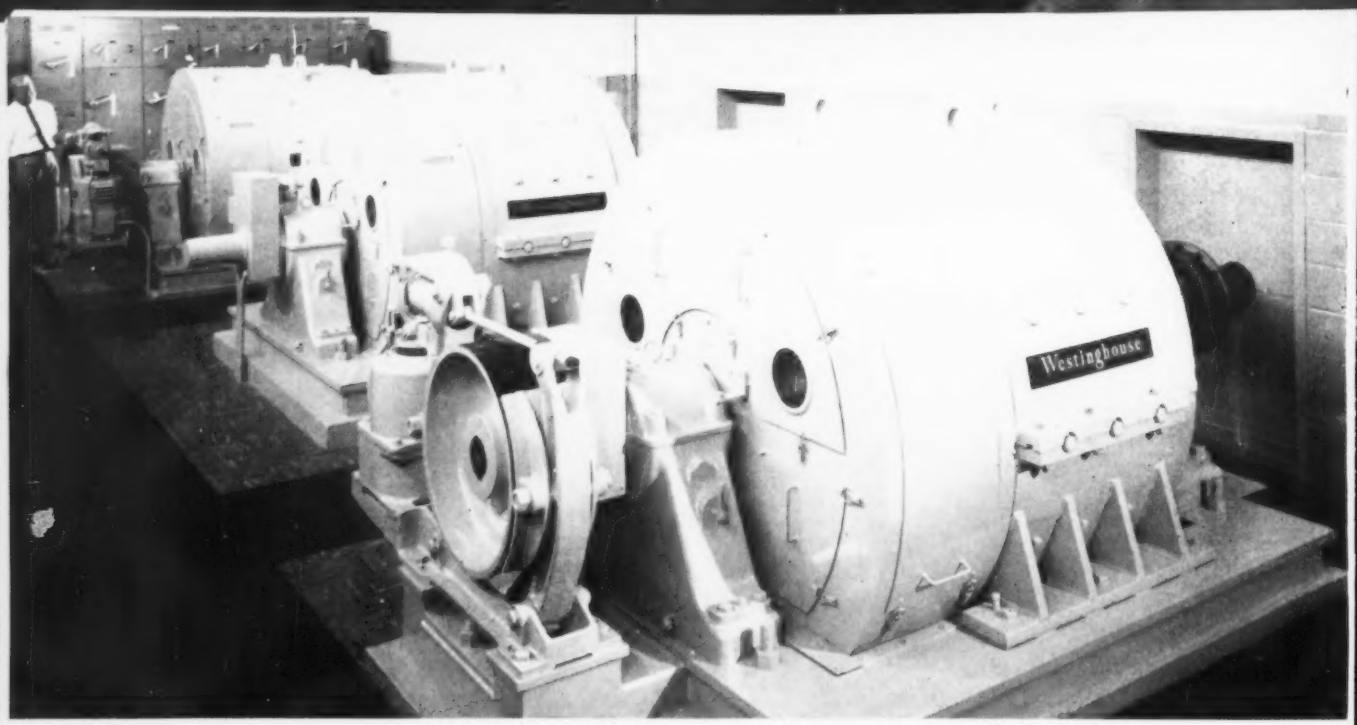
Main drive control panels with main circuit breakers (top) and memory-type fault finder on left. System faults are indicated instantly and recorded to make trouble shooting easy.



Magamp regulators are mounted in the rear of the main drive.

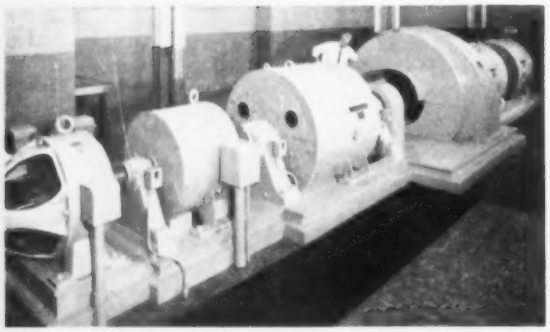


for dependable drive power . . .



Three 1250-hp 200/600-rpm motors are interchangeable for main drive and reels on typical Sendzimir mill. Oversize bearings insure longer bearing life and minimum maintenance.

Westinghouse drives are tailor-made to meet your specifications



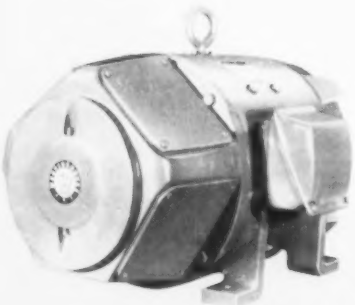
Power for main drive motors of Sendzimir mill is supplied by three 125-kw M-G sets with three 1000-kw main drive generators and 3000-hp synchronous driving motor.

Life-Line® "H" motors with silicone insulation achieve up to 55% reduction in armature inertia by decreasing armature size. With commutating ability increased 35%, the Life-Line "H" assures faster reversing performance.

Westinghouse main drive equipment supplies the power needed for heavy reduction on Sendzimir and other cold rolling mills. Armature coils on all large rotating equipment are protected with Thermalastic® Insulation for three times greater dielectric strength under varying temperature conditions.

Rubber-mounted sight-glass windows on generators and motors provide for easy inspection of commutation under operating conditions. Commutator covers are easily opened for routine maintenance. Full-length commutating poles provide improved commutation under varying load conditions.

Westinghouse steel mill experience in all types of drive and control problems can help in your next planning or design session. A Westinghouse team will accept unit responsibility and work with your engineering staff. Contact your Westinghouse sales office or write: Westinghouse Electric Corporation, 3 Gateway Center, P.O. Box 868, Pittsburgh 30, Penna.



YOU CAN BE SURE...IF IT'S

Westinghouse

GROB GEAR ROLLING MACHINES

EXCLUSIVELY MFD. BY GROB INC. GRAFTON, WIS.

PRECISION
BAR STOCK ROLLED
TO SPECIFICATIONS

broken sardines and cut fingers

You avoid broken sardines and cut fingers when you open stubborn cans with their handy keys—keys which are often made from special uniformly tempered, low carbon CF&I-Wickwire Can Key Wire.

Chances are you don't need wire to make can keys. But *you may need one or more of the nearly 100 different categories of specialty wire for which CF&I-Wickwire is famous.* Let us show you how we can meet your most rigid chemical and physical specifications on high and low carbon wire in all sizes, shapes, tempers, finishes and grades.

Check This List!

FOR THE WIRE YOU REQUIRE, SEE CF&I-WICKWIRE.

FLAT AND SHAPED WIRES
Armor Wire
Bobby Pin Wire
Bookbinder Wire
Brush Wire
Casing Wire
Cotter Pin Wire
Curtain Spring Wire
Die Spring Wire
Gutter Broom Wire
Lock Spring Steel
Rake Tine Steel
Regulator Spring Wire
Snake Fishing Steel
Stapling Wire for Preformed Staples (Flat)

LOW CARBON FINE AND SPECIALTY WIRE
Bee Wire
Bonnet Wire
Bookbinder Wire
Broom Wire
Clip Wire
Dent Spacer Wire
Drapery Pin Wire
Florist Wire
Fuse Wire
Glass Netting Wire
Hairpin Wire
Hook and Eye Wire
Mattress Wire
Picture Cord Wire
Picker Tooth Wire
Pin Ticket Wire
Pin Wire
Ring Traveller Wire
Spiral Binding Wire
Stapling Wire
Stapling Wire for Preformed Staples
Stone Wire
Weaving Wire
Weaving Wire for Fly Screen Cloth
Wissco Iron Wire

HIGH CARBON FINE AND SPECIALTY WIRE
Aircraft Cord Wire
Armor Wire
Belt Hook Wire
Bobbin Ring Wire
Brush Wire (Tempered and Untempered)
Brush Wire (High Strain)
Chrome Vanadium Spring Wire
Core Wire (Aluminum Cable Steel Reinforced)
Curtain Spring Wire
Flexible Shaft Wire
"Gamma" Spring Wire (Upholstery Spring Wire)
Zig Zag Wire
No-Sag Wire
Hat Wire
Heddle Wire
Hose Reinforcement Wire
Hose Wire, Mechanical
Hose Wire, Vacuum and Defroster
Rope Wire
Signal Corps Wire
Spoke Wire
Hard Drawn Spring Wire
Oil Tempered Wire
Spheroidized or Annealed Spring Wire
Tire Bead Wire
Valve Spring Wire

MANUFACTURERS LOW CARBON COARSE WIRE
Bag Tie Wire
Basket Handle Wire
Box Binding Wire
Brush Handle Wire
"Cal-Tie" Wire
Can Key Wire
Case Hardened Ball Wire
Chain Wire
Clamp Wire
Clothes Pin Wire
Concrete Wall Reinforcement Wire
Garment Hanger Wire
Hay Baling Wire (Coiled)
Lingo Wire
Lintel Wire
Loop Wire
Merchant Quality Wire
Pail Bail Wire
Rivet Wire
Stapling Wire
Strand Wire
Tying Wire
Welding Wire
Wissco Iron Wire
Industrial Quality Wire
Cold Rolling Quality Wire
Heading, Forging or Roll Threading Quality Wire
Medium High Carbon Wire

CF&I-WICKWIRE WIRE

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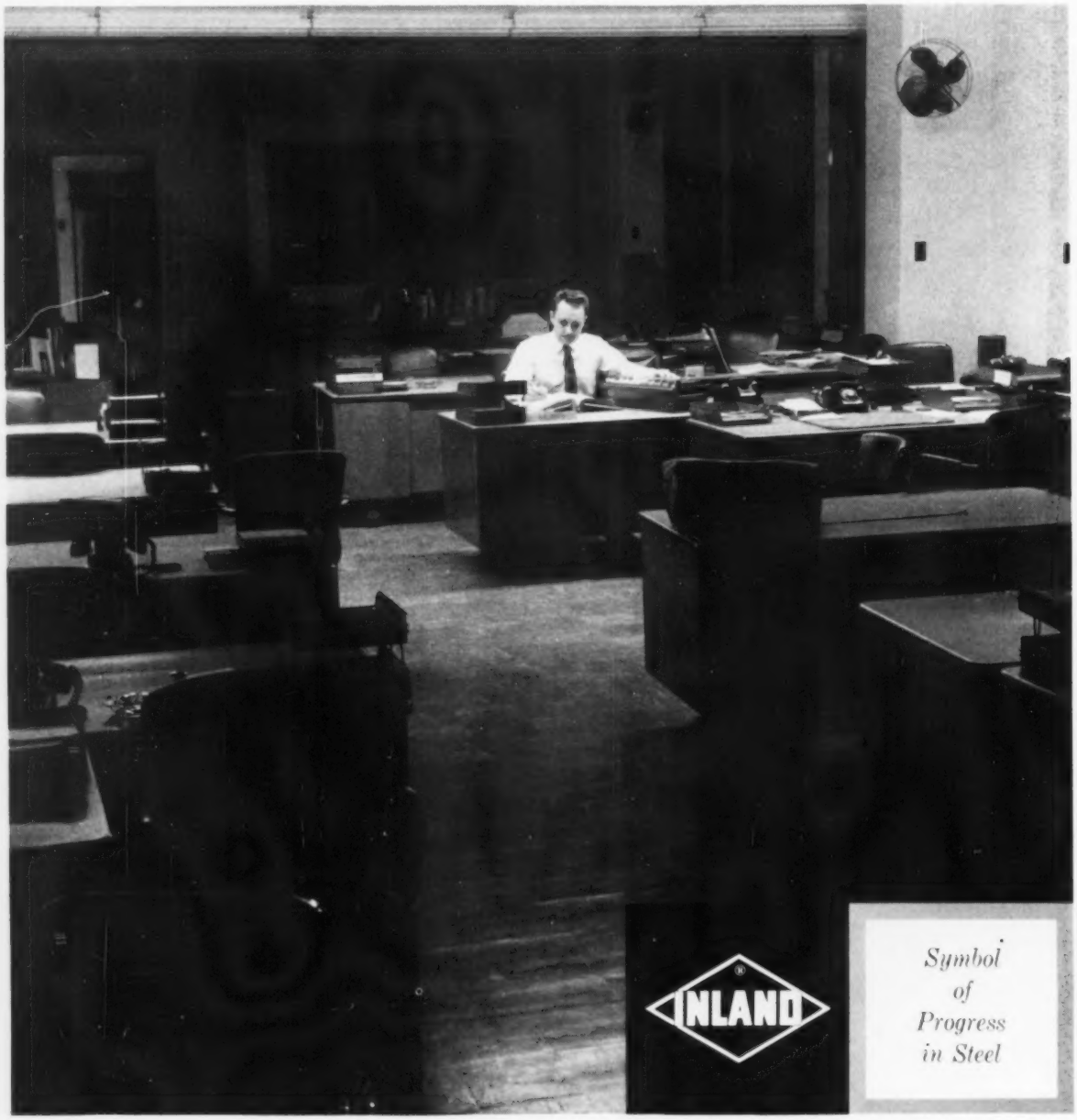
CF&I

4241

20 more on the 76

Making steel is not the only after hours operation at Inland. Scheduling production to make certain you get the *kind* of steel you need, in the *quantity* you need, and *when* you need it is another job that can't be put off until tomorrow. Production schedulers are in constant touch with every mill, aware of up-to-the-minute operating capabilities, keeping steelmakers informed of changing requirements . . . like squeezing an extra 20 tons into a mill schedule for a customer with a last minute "must." As nerve center of the sales department, Inland's order division is close to the mills and close to the customer . . . ever sensitive to his requirements.



INLAND STEEL COMPANY • 38 South Dearborn Street • Chicago 3, Illinois

Sales Offices: Chicago • Milwaukee • St. Paul • Davenport • St. Louis • Kansas City • Indianapolis • Detroit • New York

Too Much Missile Secrecy?

Can the urge for secrecy on U. S. missile development kill off progress in this field? One leading missile expert says the Pentagon's fever for silence is a greater threat to national security than the advances made by a potential enemy. Military threats to civilian personnel ("don't talk to anybody!") are slowly stifling all scientific development, he charges.

Photos Clock Corrosion

Time-lapse photography yields a technique for measuring the rate at which a solid surface is attacked by a corrosive gas. It makes a permanent record of the reaction's progress at specific time intervals. Pictures give an accurate measure of dimensional changes in the solid sample. Thus the rate of change of sample mass can be tabbed.

Freezing Cuts Magnetism

Do all magnetic metals become more so as temperatures go down? Science has always said yes. Now comes the joker: Researchers have made an iron-aluminum alloy whose magnetic properties fall off at low temperatures. They believe this may be a clue pointing to a tieup between rusting and magnetism.

Helps Polyethylene Bonds

A chromic acid treatment will improve the normally poor adhesive bonding properties of polyethylene plastic. Researchers say the acid alters the plastic surface so that bonds develop better peel and shear strength. A report is available which describes treatment procedures.

Skip Right-To-Work Issue

Ike's upcoming sheaf of proposals to purify union managements will duck the red hot right-to-work issue. Instead, the 1958 Congress will get a package calling for (1) federal policing of welfare and insurance funds (a repeat item), (2) criminal penalties for union-busting activities, (3) a federal ban on "blackmail" picketing (coercing reluctant employees to sign a union contract).

More Continuous Casting

The aluminum industry seems nearly ready to break some big news about continuous casting. Almost all the prime producers have plans aimed at linking the casting process directly to sheet and strip rolling. If they work, such casting machines could be a big factor in decentralizing rolling mill operations.

Non-Corroding Ships

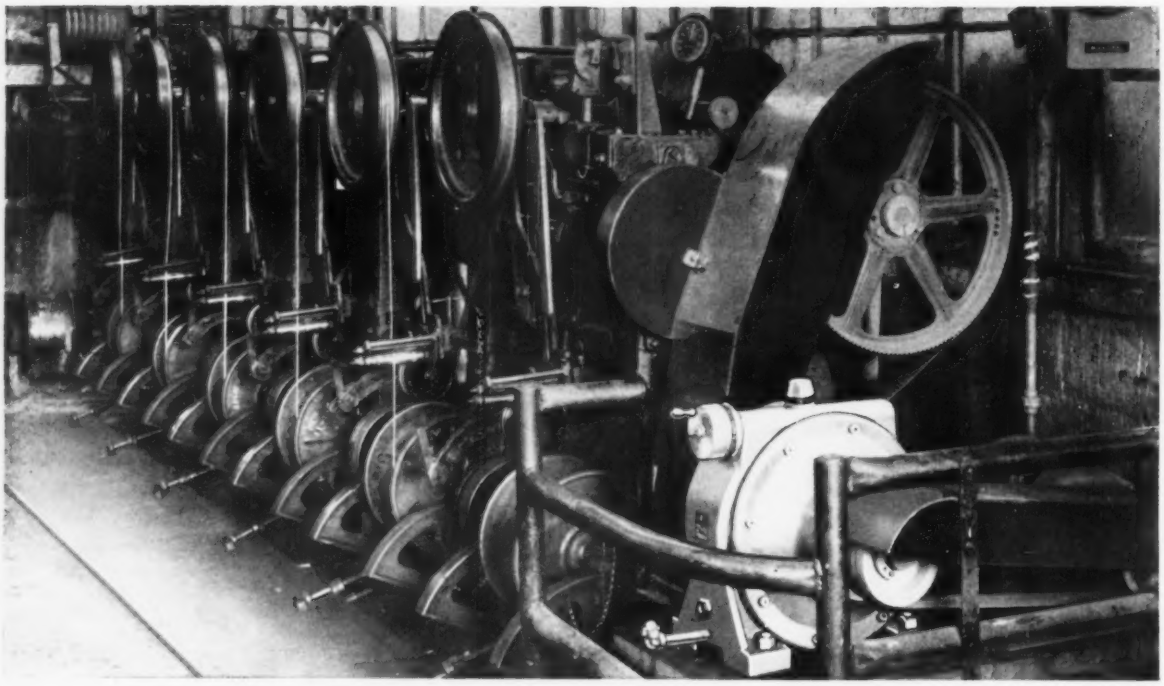
Lower repair bills and longer lives for ships are promised by an automatic electrical system that stops ship-hull corrosion. Already installed on Navy and commercial vessels, the device is aiming for use on offshore oil and radar rigs, seawater pipelines and such. The impressed current, cathodic-protection units require no service or maintenance. They can be salvaged intact at any time.

Steel Mills on Tight Rope

Sales forecasts are getting extra attention from steel mills right now. To bolster their cash positions for year-end statements, mills are cutting inventories. At the same time, they must stay competitive on rush orders, which take fairly sizeable stocks of semifinished and in-process material. All of which means some tight-rope walking to keep stockholders and customers both happy.

Foreign-Tool Salesmanship

Foreign machine tool builders are intent on getting a bigger share of the U. S. market. Hard-hitting sales pitches via the strip-film-and-record techniques are tops for brevity and genuine appeal, American prospects say. After one such "picture show," top brass at a midwestern plant admit they were almost mesmerized into buying a machine they had no immediate use for.



CLEVELAND SPEED VARIATOR

winds 4 reels of cable simultaneously—where old drive slipped with 2 reels

THIS machine winds tin-plated wire used in the manufacture of cable. The Cleveland Speed Variator on it replaced a drive of the same capacity with which there was slippage and frequent maintenance.

With the new Cleveland, it was immediately possible to run simultaneously 5 reels of the heaviest wires, as compared to only 2 with the old drive. In fact, the 10 HP drive motor soon proved unequal to the 5-reel load which the Cleveland was handling without slippage. Now driving 4 reels of the heavy wire, the machine is doing double the work it formerly handled.

Wherever you need a variable speed drive, consider Cleveland. Write for Bulletin K-200. The Cleveland Worm & Gear Company, Speed Variator Division, 3282 East 80th Street, Cleveland 4, Ohio.

Note these major advantages of the Cleveland Speed Variator

1 An extremely compact unit, with input and output shafts in line and rotating in the same direction.

2 Operable at any input speed up to 1800 rpm—either clockwise or counterclockwise rotation.

3 Rated for constant horsepower output over a 9:1 or 6:1 range; or for constant torque over a 6:1 range.

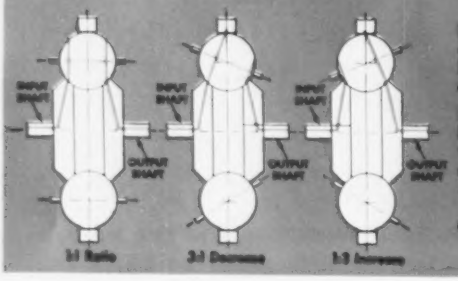
4 Infinitely variable output speeds over the entire range of adjustment.

5 No slippage—positive, automatic torque adjustment in direct proportion to the loads encountered.

6 Ample bearing support on both shafts for overhung pulleys.

7 Long life and minimum maintenance through absence of belts and complicated linkages.

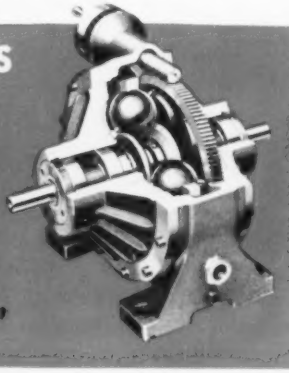
HOW THE CLEVELAND SPEED VARIATOR WORKS



Power is transmitted from input shaft to output shaft through alloy steel driving balls which are in pressure contact with discs attached to the two shafts.

Relative speeds of the shafts are adjusted by changing the positioning of axles on which the balls rotate (diagram, right, shows cutaway Variator with hand regulating wheel).

"It's the Drive That's on the Ball."



SPECIAL REPORT

Government in Business:
Costly Threat to Free Enterprise

But Congress and Public Show Little Interest

In spite of the work of the Hoover Commission and other studies, the government goes right on competing with private business.

Because of tax concessions and other advantages, these operations are unfair competition, and costly to taxpayers. — By Clarence J. Brown, Member of Congress.

▪ Unknown to most Americans, their Federal government is caught up in a startling paradox involving many billions of dollars and a fundamental concept of free democracy. The paradox is simply this:

Despite our nation's role as the world's foremost exponent and leading practitioner of free enterprise, the government has quietly built a business-type empire rivaling the greatest commercial and industrial dynasties in our private economy.

Undercut Business—Worse yet, many government-operated activities actually compete in the domestic marketplace with taxpaying private interests.

Government competition, on the whole, is not only unnecessary but grossly unfair. Lacking the profit incentive and generally unburdened by taxes, Federal businesses are able to attract customer dollars that otherwise would go to private concerns.

Thus the nation's tax base is undermined, with the sad result that individual tax shares are increased to make up the lost revenue.

Sad Example—To illustrate how this unhealthy circle works, consider this actual case study:

A Government installation in a large metropolitan area on the West Coast conducts a blueprinting service. It offers this service to other Federal facilities in the area, in direct competition with private interests.

The Government blueprinters charge only what is necessary to break even—and under mysterious bookkeeping practices, this means that such obvious outlays as salaries are not counted. Established with tax funds, the Federal business pays no taxes in return and little or no interest on invested capital.

Meanwhile, private blueprinters, unable to match their government competitor's unrealistic prices, are

Congressman Clarence J. Brown, Blanchester, O., has been in Congress since 1938. He is often called "the father of the Hoover Commission," since he drafted the legislation by which Congress created the two Commissions.

He also served on both fact-finding groups, formed in 1947 and 1953.

A newspaper publisher in Ohio, he served as lieutenant governor and secretary of state before turning to national politics. He was chairman of the executive committee of the GOP National Committee and is now vice chairman.

cut off from a pool of potential customers, while forced at the same time to help underwrite the competition through high taxes.

Far-Flung Activities — This, of course, is only one illustration of government in business in a big way. Other activities in this commercial empire include livestock farms and textile mills; mines and printing plants; retail stores and metal foundries; airlines, trucking lines, and steamship lines; tree nurseries and service stations; bakeries and ice cream factories; optical shops and motion picture studios . . . and this list is far from complete.

Even these samples, moreover, represent only one of the three broad categories of government business-type operations. Activities listed above are taken from the government's official inventory of operations which produce goods or services for the government's own use.

For Outside Use — Two other categories are recognized: (1) Activities which provide goods or services for public consumption, such as power plants and the postal savings system; (2) Activities which provide goods or services for government personnel, such as commissaries and post exchanges.

Unfortunately, Federal officials lack, or claim to lack, a complete inventory of activities in the last two categories. Only recently I asked the Budget Bureau for information regarding these categories. The Bureau recalled that the Hoover Commission of 1953-55 looked into this matter, and then added: "We have no significant data beyond that which is generally available as a result of such work."

Thousands of Operations—But the single inventory already compiled—measuring the scope of activities producing for the government's own use—offers plenty of food for thought.

Summed up, this inventory covers 19,771 individual operations ranging through 232 of the 1,028 basic categories in the "Standard Industrial Classification Manual." Total employment exceeds 260,000, or roughly one out of every 10 civilian government workers. Total capital investment approaches $12 billion.

The Budget Bureau, author of the inventory, notes that with minor exceptions these 19,000-plus business-type activities are providing products and services which "can be procured from private enterprise through ordinary business channels."

Tremendous Scope—Weighed in terms of private enterprise, the Budget Bureau's figures tell a stunning story. For example, the capital investment in these government businesses:

Surpasses the total value of sales of automobiles and trucks in the United States in 1954.

Exceeds the total combined yearly wages of all workers in the primary metal and fabricated metal products industries.

Congress Drags Heels—For some reason the Budget Bureau's eye-opening disclosures failed to arouse more than a mild stir in Washington, and sparked the barest ripple of grassroots interest.

At issue, of course, is not who will furnish blueprints for Federal installations or freeze ice cream for veterans' hospitals, but the American ideal of private enterprise and free competition.

Clearly, free enterprise ranks as a precious possession, deeply rooted in our traditions, to be safeguarded at all costs. Thus it becomes difficult, if not impossible, to justify governmental activities running sharply counter to our concepts of national well-being and security.

Nothing New—But as far back as 1933 Congress was disturbed by Federal activities duplicating the services of private business.

At that time a special fact-finding committee of the House of Representatives discovered 232 government businesses originally established to meet emergency demands of World War I.

Can Government

▪ The Administration last week moved to cut down at least some of the abuses referred to by Congressman Brown.

The Bureau of the Budget directed all executive departments and agencies to prepare legislative proposals to give them the authority to:

1. Recover full costs for government services which provide special benefits.

2. Obtain a fair market value for government-owned resources or properties sold or leased.

The directive was based on an interagency study requested by President Eisenhower. Sample activities studied included:

Licensing; testing, inspection and grading; use of air and water navigation aids and facilities; money and credit; publications; maps, charts and aerial photographs; special studies; recreation and tourist facilities; grazing, oil, gas and mineral leasing and mining claims; land uses; and use of government-owned patents.

Charges were separated into two types: First, to recover the cost of

---

Following World War II, Congress again expressed concern at what appeared to be dangerous inroads carved by Federal enterprises into a free economy. The first Hoover Commission, of 1947-49 urged cutbacks in competitive activities. Then, in 1954, another House committee set out to gather new facts.

This committee rounded out its findings by noting that from 1929 to 1948 government wealth increased 278 pct compared to less than 80 pct for the nation's privately-owned assets; that government wealth in 1929 accounted for 15 pct of America's gross assets, and more than 27 pct by 1948.

Services Be Self-Sufficient?

a special service or benefit; second, to recover the fair market value for use or sale of resources and property.

There is now no consistent approach. In some cases, services are provided without charge; in others fees are equal to only a portion of the cost. In a few instances, the full cost is recovered. Method of determining cost varies from agency to agency.

These are some examples:

In licensing, charges range from zero to 100 pct of the costs. No charge, for example, is made for issuing of FCC and ICC licenses. Issuing of patents is about 45 pct self-sustaining.

In publications, some agencies refer requests to the Superintendent of Documents, who sells them. Other agencies give them away free. Sometimes the same publication is sold by the Superintendent of Documents and given away free by the agency.

In use of money and credit, the Export-Import Bank recovers costs. But this is the exception. Rates charged by most lending agencies are "considerably below cost because of statutory limitations or program considerations."

The government recovers only a small portion of costs of airway and inland waterway navigation aids and facilities.

The study also points to use of Federal land for grazing, oil and gas leasing, mineral leasing, and other purposes where wide variations in determining fees are in evidence, with the fee many times well below a fair market price.

While the Bureau of Budget directive is only a step in the direction suggested by Congressman Brown, it is a significant step. It will force the agencies to act, then place it squarely up to Congress to follow through.

You can also expect a lot of opposition. While at first glance it seems only logical, there will be screams from persons and organizations that have been benefiting for years from a special service which they receive at no cost, or perhaps a fraction of cost.

Nor will the agencies give up without a struggle in every instance.

Where Government Competes With Private Business

Printing
Optical Goods
Airlines
Motion Pictures
Restaurants
Auto Service and Repair
Tree Nurseries
Baking
Dry Cleaning
Dental Supplies
Scrap Processing
Lending
Savings Accounts
Warehousing
Shipbuilding
Power Generation and Sale
Photostats
Railroads
Foundries
Cement
Sawmills
Paint Factories
Garment Making

Commission Discoveries—But it remained for the second bipartisan Hoover Commission of 1953-55 to unearth the heaviest cache of evidence that here indeed was an area of Federal endeavor which had long since passed sensible proportions and which posed a critical threat to the country's economic equilibrium.

The Hoover Commission brought to light disconcerting facts about:

Commissary Stores and Px's—The Defense Dept.'s 199 commissary stores and 450 post exchanges in the United States counted gross sales of $655 million in 1954; civilian employees numbered 23,000.

Bakeries—The government in 1954 operated 76 commercial-type bakeries in the United States, competing with 6,800 privately-owned bakeries. Military bakeries, 46 in all, were found operating at an average capacity of 45 pct, although it would have required only 13 pct of the surplus capacity of private bakeries to supply all military needs.

Laundries — Government agencies in 1954 operated 360 laundries and dry-cleaning plants in the United States, employing 12,000 persons at a yearly payroll of $28,000,000. The armed forces operated 125 laundries, most of them with substantial idle capacity. Nevertheless, $1,000,000 in defense funds was spent for new laundry and dry-cleaning equipment in 1954.

Postal Savings System—Congress established postal savings in 1910 to fill the gap created by numerous bank failures in the financial panic of 1907 and to provide banking facilities in rural areas and small towns. Less than one-fifth of the nation's 40,000 post offices are designated to receive postal savings, and 80 pct of the postal savings branches are located in first and second-class post offices in larger cities and towns, thus actively com-

peting with private banking institutions.

While pinpointing these and other Federal activities which it considered largely unnecessary and maintained only at staggering cost to taxpayers, the Hoover Commission also recognized that certain government business operations are justified, particularly those with strategic importance.

It Adds Up—A closer look at the scope of Federal activities covered in the Budget Bureau's inventory shows that commercial and industrial projects conducted by civilian agencies—and for purposes of government consumption only—number 19,625, with some 90,000 employees and capital assets of $4.8 billion. Bulk of this capital is traced to our $4 billion atomic energy program.

But payroll costs are boosted further by 70,000 employees of private contractors operating government-owned civilian facilities.

The armed forces account for fewer business-type activities (506), but far greater investment ($7.1 billion). This, however, refers only to the Defense Dept.'s manufacturing operations producing for government use. Actually, the Hoover Commission located at least 2,500 business enterprises in Defense.

That's Not All—According to the Budget Bureau inventory, employment in the Defense Dept.'s 357 installations staffed by government workers totals 170,000.

These figures, as we've noted, give only part of the picture. Data covering the complete range of government-financed business activities in all categories are still missing. But the information already at hand should serve to tip off every alert American that a major problem exists.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

(Kawneer Co. Photo)

T-SHAPED: 1500-lb T-ingots contrast with 50-lb conventional variety.

Aluminum T-Ingots Save Space

▪ New T-shaped aluminum ingots are now being shipped by Aluminium Ltd. The new shape, augmenting standard ingots, is designed to provide improvements in handling, storage and melting procedures.

Developed by Alcan and affiliates, the new ingot is shaped like a flattened "T". It is available in 750 and 1500-lb sizes, and is designed to fit on the tines of a fork-lift truck. Ingots can be handled either individually or in stacks without strapping.

Save on Exposure—The T-ingots are the result of Aluminium research to produce a large shape offering cost savings in handling and a flat surface with reduced porosity to avoid surface entrapment of moisture and dirt.

A large volume of aluminum shipments are for remelting, and ingots for such use are often stored in the open air. Flutes and depressions of conventional shapes collect dirt and moisture, with resulting melting problems.

Direct Chill Casting—The new line of T-ingots is produced by direct chill casting, and features a large flat top surface. This is proving valuable in overcoming outside storage problems, as water can not collect and dirt can be easily brushed off. The squat "T" shape permits easy stacking.

In one test, 18,000 lb of metal have been safely stacked in an area holding only 10,000 lb of aluminum in the conventional bundles of 41 ingots weighing 50 lb each.

Width and length of the crossbar of the "T" have been set to permit optimum utilization of freight car space.

U.S. Road Program Gains Speed

Planners Clear the Way for Construction Crews

Snags at the planning level have stretched out the federal roadbuilding timetable.

Next year will see a surge in building that won't hit its peak until 1965.—By G. J. McManus.

■ After a period of impatient disappointment for many suppliers, the U. S. highway program seems ready to take off.

About 1500 miles of interstate highway will be built next year, says Charles D. Curtis, Commissioner of the U. S. Bureau of Public Roads. That would be 10 times the 1957 mileage.

Fact or Fancy—One major mill predicts that more than 2.4 million tons of steel will go into roads in 1958. It would be a 20 pct hike over 1957. And sales of roadbuilding equipment, one builder says, will jump 10 pct next year. There was little or no gain in 1957.

It will take more than optimistic predictions to get suppliers excited. The current year started with gaudy hopes but will see only about 150 miles completed of the proposed 41,000-mile interstate system. Mr. Curtis says frankly his own figure for 1958 is just a rough guess. However, he does paint a promising picture of preliminary activity.

The Record Speaks—In the first 10 months of this year, over 940 projects for interstate highway were launched. They include jobs that are underway, advertised or in a few cases, completed. Total cost of this group is $1.3 billion.

In addition engineering studies costing $230 million and right-of-way acquisitions totaling $702 million have been authorized under the federal interstate program.

Finally, federal authorizations for primary, secondary and urban roads are lining up as $850 million for 1958 and $879 million for 1959. After that federal outlays are expected to level off around $900 million a year. In this portion of the program, the federal government puts up 50 pct of the funds required. For the interstate system, the federal share is 90 pct.

Increases, No Cuts—The highway program has been slow moving out of the planning stage and it will probably stretch beyond 1969, when it was supposed to be finished. But there have been no cutbacks in the program and there is no reason to think the overall requirements will be less than was expected.

In the period from 1957 to 1971, new roads will take 52 million tons of steel, says Richard F. Sentner, executive vice president, commercial, U. S. Steel Corp. That's 3 million tons more than the original estimate by the Bureau of Public Roads. It covers two additional years.

Peak in 1965—For the next few years, roadbuilding steel will probably run well behind the Bureau's timetable and a little under U. S. Steel's estimate. For example the government agency had predicted a steel requirement of 3.3 million tons in 1957 and 3.6 million tons in 1958. Actual consumption will probably run about 1 million tons under the estimates for both years.

The Bureau's schedule called for steel requirements to hit a peak of over 3.8 million tons in 1960 and hold at this figure for the following seven years. It now appears that the leveling off point will not be reached until 1965.

One significant point has been obscured by the lag in federal building. This has been a good year for general highway building. Over the first nine months new roads valued at $3.7 billion were completed, or 10 pct more than in 1956 over the same period. September was 13 pct better than the same month in 1956.

Since these gains have come without increased purchases of equipment, roadbuilders have probably been working their machines pretty hard. The heavy construction of the interstate program seems certain to bring more equipment purchases next year.

There is little chance that any phase of the program will be held up for lack of steel. Increased production of structurals and plates is filling up supply channels.

Nation's Steel Needs for Highways

Net tons Year	Interstate	Other Highways	Total
1957 (actual)	456,665	1,550,000	2,010,000
(original estimate)	685,000		2,235,000
1958 (actual)	800,000	1,640,000	2,445,000
(original estimate)	905,000		2,545,000
1959	973,000	1,750,000	2,725,000
1960	1,080,000	1,890,000	2,970,000
1961	1,165,000	2,050,000	3,215,000
1965	1,500,000	2,300,000	3,800,000

After 1965, Requirement levels.

Business Booms For Production Warehouses

STRIP: This is slit and coiled at the warehouse.

Slitting, shearing, bending and burning are now big business at many warehouses.

Buyers find they save on equipment and production costs; avoid running up inventory expenses.—By T. M. Rohan.

■ Purchasing agents are finding an old trick is paying new dividends. They are letting warehouses do their semi-processing at lower costs on high production equipment. And the distributors are putting the metal on the customer's floor for as much as 50 pct under the cost of using mill steel and the buyer's own fabricating.

In addition, warehouses can resell the leftovers and credit the customer who would otherwise scrap them or pile up dead inventory.

The percentage of orders with semi-processing in them has shot up in a year from 20 pct of the total to over 50 pct for some national warehouse chains. A few concentrating in the sheet business report gains up to 75 and 80 pct.

Equipped for Job—The growth of semi-processing started during World War II among small, independent warehouses. In the last 2-3 years larger national chains have jumped on the bandwagon, especially in sheets, and galvanized coils to give the total a big boost. The percentage increase of steel going through warehouses can largely be attributed to this. In 1940 they handled 14.6 pct of total steel shipments. By last year they were up to 20.1 pct and another 10-15 pct increase is expected in the next 5-7 years.

The high-speed machinery which warehouses have installed the last few years pours out processed steel at a rate which hand burning and cutting men would envy. Reliable Steel Plate Co. in Cleveland has burning machines which will cut patterns out of 18-in. steel plate and have cut through 24 in.

Korhumel Steel and Aluminum Co. in Evanston, outside Chicago, is probably the largest cold-rolled coil processor in that area. It has 4 rolling mills, 15 slitters, 4 edge rollers, 4 square shears, an upcut line which will handle coils to 30,000 lbs and coil annealing equipment. Vice-President Richard Devens says the slitters are on 3 shifts and 80 pct of the tonnage being shipped is semi processed.

Savings Talk—Jones & Laughlin's warehouse outside Cincinnati also has a temper mill as well as edge rollers turning out strip with tolerances to 0.001 in. plus finish and temper to specifications. In most warehouses roller levellers, edge rollers, slitters, high capacity shears, saws and bending equipment are becoming common.

The trend toward warehouse processing is growing because manufacturers jump at the savings which this high-speed equipment can give them. In addition the customer saves inventory cash and expensive space for storage and equipment.

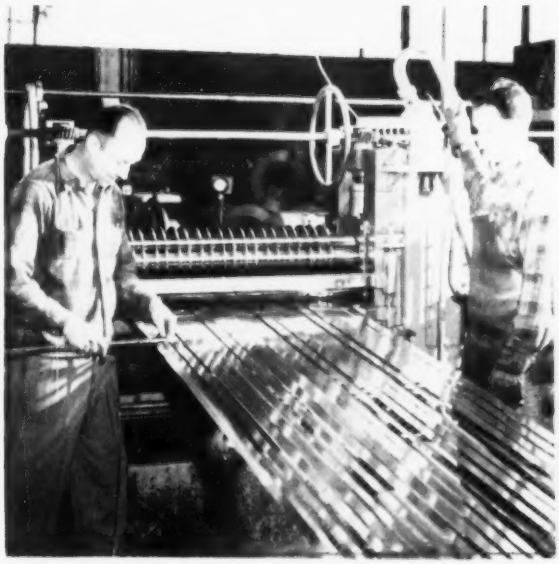
Detroit automakers are even ordering strip from warehouse job slitters while their own stand idle. To auto plants, slitter operation is a sideline, while warehouse slitters have stepped up output so they're turning out a ton of narrow coil for every $1\frac{1}{2}$ man hour.

Campaign Pays Off—The present surge in buying semi-processed is a logical and happy realization of the "pitch" warehousemen have been making for years, especially on saving inventory costs. An IRON AGE report (Mar. 29, 1956) estimated costs of carrying steel inventory at 16.5 pct of purchase price per year rather than the traditional 6 pct rule of thumb. Other authoritative estimates run as high as 40 pct considering alternate use of capital.

Other advantages for buyers:

An established warehouse buying pattern is a windfall in a tight steel

PLATE: Cutting to fit the customer's orders.



SLITTING: A big factor in production warehouses.

market. Capital investment in machinery is saved while warehouses can afford higher production machines by accumulating orders. Warehouse paperwork routines are streamlined so inventory checks are immediately available. Contacts for getting special items eliminate shopping. On carbon steel, warehouse chemistry can be specified much closer than that on steel from the mill.

Four Who Profit—Here is what some Ohio warehouse customers are doing:

International Engineering Co. of Dayton buys 70 pct of its steel from warehouses compared to less than 50 pct a year ago. Nelson Stud Welding at Lorain, O., has been able to move fast into a lush new market in structural anchoring for bridges, buildings, and roads because it can get thousands of small sheared plates from nearby warehouses on short order without investing in a big shear.

Robbins & Myers at Springfield, O., gets ¼-in. sheared blanks delivered to its assembly plant dock for 51.5¢. It would cost 61¢ for them to shear from mill steel not including cost of a complicated in-plant handling problem. Trotwood Trailers, Inc., of Trotwood, O., which turns out 1000-1500 house trailers a year, buys only main chassis beams from mills and the remainder, mostly formed 12-gage parts, from warehouses.

International Engineering makes steel mill ingot cars, complete ceramic and refractory plants, kiln cars, and other special items.

Shop Extension—"We are using local warehouses to the fullest extent of their capacity," says Miss Thora Waltemath, International purchasing agent. "We keep a close check on their facilities because we look on them as an extension of our own shop capacity. Because most of our

Steel Service Centers: A New Warehousing Concept

The trend toward semi-processing by our steel service centers is bound to continue so that the percentage of total finished steel moving to the customer through our outlets will continue to increase. More semi-processed steel could easily be responsible for a 10 to 15 pct increase in our industry's business in the next 5 to 7 years.

For manufacturing plants, taking advantage of our high speed equipment, fast delivery and conservation of capital, space and inventory investment can make a significant savings in operations. It also, in effect, gives them extra production facilities and productivity at negligible cost.

The growth of semi-processing in our warehouses is one of the big reasons we are now starting to call them steel service centers. The growth is a logical development of the trend toward higher speed production, specialization and automation in manufacturing plants.

Robt. G. Welch—Executive Secretary
American Steel Warehouse Assn.
Cleveland

products are custom built, we are now buying almost 70 pct of our steel from warehouses. We could buy from mills and get a lower material price but we are saving up to 50 pct by letting the warehouses do the cutting and burning. They can sell the leftovers and they have lower production costs. Their cooperation has been outstanding."

Plate decks for cars are cut to size and delivered by warehouses to International for $7 per cwt compared to $6.50 from mills. This does not include the labor, waste and in-plant handling incurred with mill steel. An 8-ft long, 3-in. stainless bar weighing 192 lbs is delivered from a warehouse ready for assembly for $109. Delivered from the mill it would be in random length, 12-14 ft for $164, according to Miss Waltemath. Cutoff would go into inventory and sit there for months. International has its own 3-head flame cutter but on large multiples can get parts cheaper and to closer tolerances from warehouse.

Fast Delivery — Nelson Stud Welding recently moved into a major market of anchored studs for buildings, bridges and highways, thanks to warehouse services, reports Jack Mantz, of the firm's purchasing department. Anchor plates are delivered in a matter of days in lots of 5000. Warehouses shear the ⅜-in. plates and deliver them in time for Nelson to meet tight shipping schedules. The alternative would be buying a shear or putting the cutting shop on double shift with overtime.

All But 20 Pct—Trotwood Trailers buys 80 pct of its steel trailer parts semi-processed from warehouses. Only junior beams, used for all chassis, are standardized and cut from mill steel. Other chassis parts of 12-gage steel in Z, U and L shapes are also bought from warehouses. Lloyd Garber, purchasing agent, says warehouses with press brakes have a major sales advantage and are fully exploiting it.

A prominent Cleveland warehouseman says, "Over half our orders now going out the door have some semi-processing in them compared to about 20 pct a year ago. In some cases we are packaging the parts and sending them directly to the customers distribution outlets. We are not going into competition with fabricators because they're our customers. But we can save smaller companies real money by cutting to length, shearing, burning and sawing. And heat treating can be arranged.

Closing Labor Gap—"Labor is the big item in metalworking today and we can use high-speed, labor-saving machinery and equipment which would be uneconomic for shops with a variety of product. We can more than make up in labor and equipment savings the difference between mill and warehouse price and are doing it every day."

How Detroit slitting firms can turn out narrow strip for less than automakers can do it themselves is explained by a Detroit slitting firm official: "In auto companies, slitting is a sideline. They have never gone into it deeply and are really not too interested because it's a small operation on their scale. They generally buy big $150,000 to $300,000 slitters, which also take up valuable room. They have double our downtime plus higher overhead and floor space and seldom run more than 100 tons per month.

Reduce Setup Time—"We would buy two smaller rolling mills and operate them with one crew. Most time is taken in setup, which takes 1 to 1½ hours. So we set up one machine while the other is operating. Material for 4 or 5 customers is slit simultaneously for minimum scrap. Through efficient operation, order accumulation, and good scheduling made possible by variety of orders, our overhead is about a third that of do-it-yourself slitter operations.

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PA's Say No Change In Output, New Orders

The expected fourth quarter spurt hasn't materialized, says the National Assn. of Purchasing Agents. A survey indicates production and new orders are unchanged this month from October.

Specifically, 20 pct of companies polled say production is better. But 29 pct say it is worse. New orders were reported up by 24 pct, but down by 30 pct.

For the first time since the beginning of World War II, purchasing executives agree that all materials are in adequate supply, including nickel.

Prices — The vast majority, 74 pct, say there has been no change in the prices they must pay. About 17 pct say they are paying more.

Employment—There's a definite downward trend. This month 41 pct are operating with fewer workers. Last month it was 35 pct, September was 28 pct. Overtime has been reduced, and skilled workers are reported to be more plentiful than jobs.

Inventories—Deliveries are still good, and no one shows any desire to increase stocks. There is some action toward reduction in line with lower production schedules. But in general, most purchasing agents say they are satisfied with the present position.

Buying policy—Forward buying policies on production and maintenance items are the same. But on capital goods, some willingness to extend for longer periods is noticed.

There appears to be little hand-to-mouth buying. In November, only 6 pct of the purchasing agents answering the survey followed such a policy, while 33 pct worked from 30-day inventories, and 38 pct had enough on hand to last 60 days.

Purchasing agents say they are paying more for paper cartons and multi-wall bags, ball bearings and electrical equipment. Scrap iron, tin, coal and rubber cost less.

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Is Your Scrap Loss Too High?

Here Are Some Guideposts Based On Special Study

Government survey provides first industry-wide figures on scrap loss.

Study covers iron and steel, copper-base, and aluminum scrap generated by metalworking.

▪ Are you generating more scrap than other companies in your industry?

The Business and Defense Services Administration, U. S. Dept. of Commerce, has just completed a study that provides some yardsticks on this score. The study shows the percentages of iron and steel, copper-base, and aluminum scrap generated by various industries in relation to total metal use.

Reasons For Survey — For instance, (see table) in metal stamping, coating and engraving, the ratio of iron and steel scrap to overall metal use is 30.8 pct; in metalworking machinery, 20.7 pct; in electrical appliances, 26.5 pct; in motor vehicles and equipment 30.3 pct.

The survey was aimed primarily at giving BDSA a "more realistic" basis upon which to develop standby measures for dealing with metallics supply problems in emergencies.

Guidepost For Industry — "The data also provide," says BDSA Administrator H. B. McCoy, "a sounder basis for judgments necessary in government peacetime operations such as export control, stockpiling, and evaluation of the many factors which influence industry trends."

Individual companies, adds BDSA, will be able to compare their scrap generation ratios and the average for their industries.

What BDSA Found—Here is a summary of BDSA's findings, which are based on a study of industry experience during 1954:

1. The average scrap generation for all manufacturing industries surveyed: 19.4 pct for iron and steel, 20.3 pct for copper-base products, and 18.4 pct for aluminum products.

2. Plants with 250 or more employes accounted for 81 pct of iron and steel prompt industrial scrap, 70 pct of copper-base scrap, and 78 pct of aluminum scrap.

3. Motor vehicles and parts accounted for 38.5 pct of total iron and steel prompt industrial scrap generated. Aircraft accounted for about 26 pct of prompt industrial aluminum scrap. In the case of copper, no one industry was so clearly predominant, although valves and fittings (except plumbing) generated more than any other.

4. Generation of prompt industrial scrap in plants with 250 or more employes is concentrated in a few states. About half of the iron and steel prompt industrial scrap originated in Michigan and Ohio; half of the copper-base scrap in New York, Connecticut, and Illinois; and close to a third of the aluminum scrap in California and Michigan.

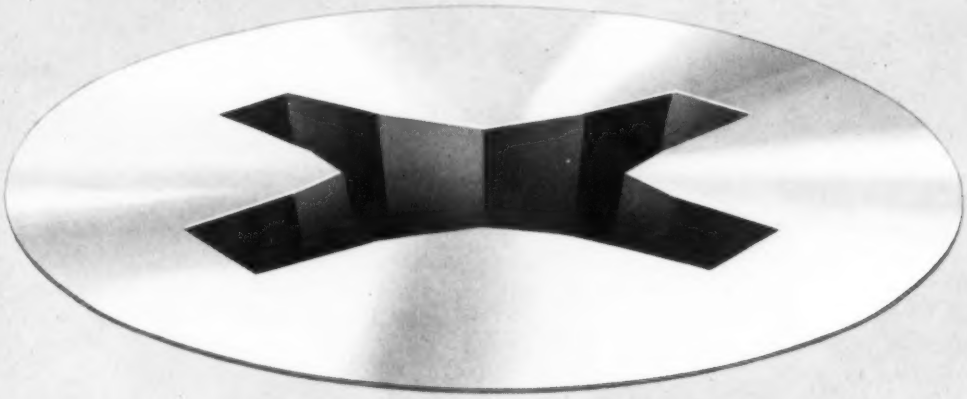
Bundles Run High—Other findings: Iron and steel prompt industrial scrap generated in 1954 totaled 10.6 million tons. About two-fifths of this was in the form of bundles, reflecting the high proportion of flat-rolled products used by industry.

Are You Scrapping Too Much Metal?

Iron and Steel Scrap Generation, by Industry (1954)

	Scrap generation ratios (pct)	Scrap generation (net tons)
Partitions and fixtures	11.5	26,700
Miscellaneous primary metal industries	25.7	384,700
Tin cans and other tinware	11.6	476,600
Cutlery, hand tools, and general hardware	22.8	231,500
Fabricated structural metal products	5.6	523,300
Metal stamping, coating and engraving	30.8	730,900
Miscellaneous fabricated metal products	16.5	403,100
Engines and turbines	22.0	98,600
Tractors and farm machinery	18.0	466,000
Construction and mining machinery	20.1	272,700
Metalworking machinery	20.7	197,100
General industrial machinery	17.1	308,000
Miscellaneous machinery parts	26.9	251,400
Electrical industrial apparatus	20.5	379,200
Electrical appliances	26.5	73,600
Motor vehicles and equipment	30.3	4,110,100
Aircraft and parts	30.1	153,100
Ship and boat building and repairing	25.6	134,700
Railroad equipment	14.8	165,600

Cut assembly time—lower production cost



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You can rely upon these sources for product reliability which assures correct mating fit between recess and driving point. This eliminates driver slippage, and prolongs driver and bit life, improves product appearance and reduces your costs.

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First Aluminum From Kaiser Ravenswood

POTS READY: With bake-out completed, the first of four lines at new Kaiser Aluminum & Chemical Corp. plant, Ravenswood, W. Va., are charged with alumina. Resulting metal was the first from the new plant.

Steelworkers Stable

John Q. Steelworker is 42 years of age and has been with his present employer for 13 years.

The American Iron and Steel Institute calls high wages, good working conditions and the attention paid to safety, the reasons for the mature and stable labor force indicated by its survey.

Average Age — The poll, of 88 pct of steel producers, showed 27 pct of their employees are 30-39 years of age, 26.5 pct are 40-49 years old. Only 19 pct are under 29. Almost 3 pct are over 65 and eligible for both pension and social security.

The survey also showed that 13 pct of wage employees were hired after they were 40 years of age.

Length of Service—One-third of the employees have been working for their current employer for 10-19 years, one-fourth from 5-9 years. One-seventh have 25 years or more of service, and only one-fifth have been working on their job less than five years.

Georgia Tax Ruling

A Georgia Supreme Court ruled that Stockham Valves and Fittings, Birmingham, Ala., does not have to pay the Georgia state income tax.

Stockham maintains sales offices in Atlanta, Ga., but all other business is conducted in Birmingham. Orders are filled at Birmingham.

Cites Precedent — Georgia demanded payment of taxes on that part of the company's income derived from sale of its products in that state. The Fulton (Atlanta) Superior Court had ruled the company must pay the tax. Stockham appealed. The State Supreme Court cited its own previous decisions and decisions of the U. S. Supreme Court in overruling the lower court.

It is understood that many out-of-state companies maintaining sales offices in Georgia have been paying the tax.

J&L Makes Chemicals

Jones & Laughlin Steel Corp. is now producing pure coal chemicals. A new plant, at its Aliquippa, Pa., works, is making high grade benzene, toluene and xylene.

A light oil containing these components is produced from the coking of coal to make metallurgical coke for blast furnaces.

J&L spent $2 million to build the plant, capable of handling 55,000 gallons of light oil per day. Purity of the recovered products is said to be in excess of standard chemical industry specifications.

Kaiser in Panama

Kaiser Aluminum & Chemical Corp. has landed the first bauxite concession ever granted by Panama. The agreement gives the U. S. aluminum producer exclusive exploration and mining rights to a large area near the Costa Rican border.

Kaiser vice president D. A. Rhoades says studies indicate "deposits are extensive." He calls it "possible" for Panama to become a major source of bauxite.

Furnace for Stainless

A new electric arc furnace and associated equipment will be added to the alloy and stainless steel making facilities of Tubular Products Div., Babcock & Wilcox Co.

Cost of the project will be about $13 million. The equipment will be installed at Koppel, Pa., four miles from the main plant at Beaver Falls, Pa.

The project is scheduled for completion late in 1959. Plans call for the production of blooms and bars suitable for tube making and extruding.

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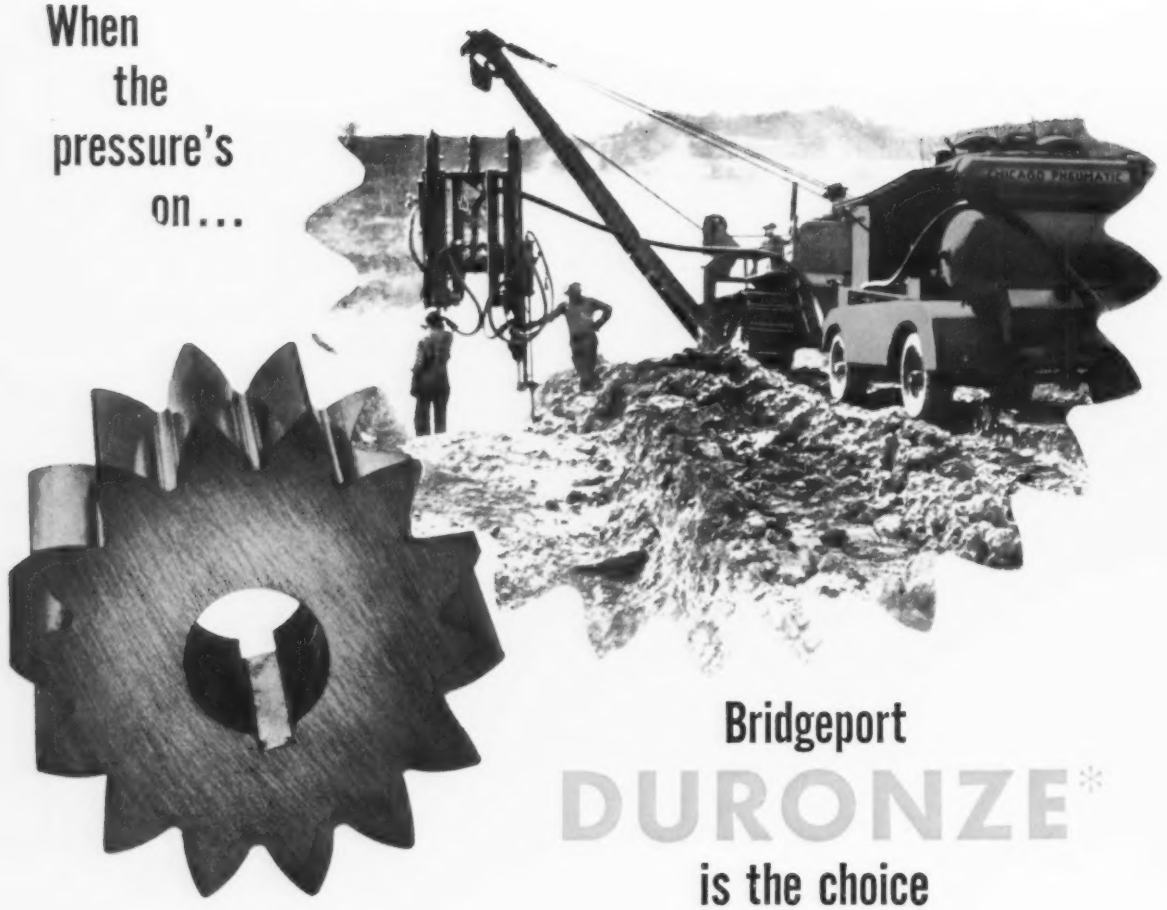

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Take, for example, its use by Chicago Pneumatic Tool Co., New York, N. Y., in the oil pump gears used in their rotary portable and stationary Class "P" compressors.

These gears pump the lubricating oil which seals rotary compressor vane clearances, lubricates vital parts and also cools the air during compression. In meeting the precise requirements of this job, Duronze's combination of high strength, wear resistance and machinability are equally important advantages.

In the annealed condition, in which it is generally supplied, Duronze has an average tensile strength of 90,000 lbs. per square inch. Its endurance limit is over twice that of Naval Brass and it is generally superior in corrosion and wear resistance.

Duronze is only one of Bridgeport's complete line of copper and brass alloys in sheet, rod, wire and tube, designed to help you meet a wide variety of product and production applications better, faster and more economically. To help you in choosing the right alloy for your specific needs, you can expect and get experienced assistance from your Bridgeport Salesman and from the Technical Staff behind him. For prompt service, give your local Bridgeport Sales Office a call today.

matched Bridgeport Brass Alloys to your job

BRIDGEPORT BRASS

Offices in Principal Cities • Conveniently Located Warehouses

Bridgeport Brass Company, Bridgeport 2, Connecticut

In Canada: Noranda Copper and Brass Limited, Montreal

N. M. Forsythe

Voice of the Machine Builders

"Dutch" Forsythe has been doing such an outstanding crusading job he was reappointed chairman of NMTBA's publicity.

He gets first hand experience as vice president and general manager of National Automatic Tool Co.

N. M. FORSYTHE: Replacement is supplanting expansion.

▪ Spreading optimism among machine tool builders is more than a hobby with N. M. "Dutch" Forsythe. It's a duty. As chairman of the National Machine Tool Builders Assn. publicity committee, it's his job to see that ups and downs of the market are viewed in their proper perspective.

"It seems to me that the machine tool industry will remain strong so long as it continues to meet requirements of American industry," Mr. Forsythe says. This is basic, he adds, and is much more important than worrying about temporary downturns.

His Market Analysis — He explains that, for the time being, heavy buying of machine tools for expansion is being supplanted by replacement programs aimed at strengthening profit margins.

"Machine tool builders," he advises, "must key their efforts to this trend and produce machines which will perform more functions with greater efficiency. Combine this with an aggressive sales effort and we can look at the future with real optimism."

Sounds Warning Note—Another phase of the machine tool industry that he is concerned with is depreciation policies. He believes that both business management and the federal government must shoulder some of the blame for a situation in which, as he puts it, sufficient capital is not being retained in business.

"You can't consider 1957 dollars on the same basis as 1937 dollars and come up with anything that makes sense," he declares. "For the future welfare of industry—and the whole country—we had better wake up and become realistic." Mr. Forsythe, a real crusader, gets his message across at every opportunity. Hundreds of executives in government and industry have received personal letters from him expressing these views.

Inventive Nature—"Dutch" is a native of Sarcoxie, Mo., where his father built carriages, truck bodies, and trailers. Back in 1924, father and son developed an automatic gear shift which they tried to put on the market. It turned out they were 20 years ahead of time.

After he was graduated from the University of Michigan in 1924, Dutch worked with his father. Then he joined Westinghouse and in 1936 switched to Borg-Warner. He spent 17 years with Borg-Warner. In 1954, he joined Natco.

Now as vice president and general manager of National Automatic Tool Co., Richmond, Ind., he meets head on industry's constant demands for versatility and economy in machine tools. And he meets them with optimism.

J&L

RESTRICTED SPECIFICATION COLD ROLLED STRIP STEEL

for Spring Steel Requirements such as these . . .

FORMED PARTS FOR HEAT TREATMENT

SIZE	6 x .036
ANALYSIS	1050
FINISH	Bright
HARDNESS	Rockwell B-78 Max.
THICKNESS TOLERANCE	± .0003 incl. crown
WIDTH TOLERANCE	± .005
MICROSTRUCTURE	Uniform spheroids
COIL SIZE	16" I.D. coils large as possible
PACKAGING	On skids — shrouded

FLAT PARTS FOR HIGH STRENGTH WITHOUT HEAT TREATMENT

SIZE	10 x .020
ANALYSIS	1075
FINISH	Bright
HARDNESS	Rockwell C-30 Min.
THICKNESS TOLERANCE	± .001 incl. crown
WIDTH TOLERANCE	± .005
MICROSTRUCTURE	Small-fine carbides
COIL SIZE	16" — I.D. Max. coil wt. 1000#
PACKAGING	On skids — shrouded

Knowing exactly what you require for most efficient fabrication and most effective product performance, J&L can set up and consistently meet restricted specifications to match your most exacting demands. Often production operations can be greatly simplified or even eliminated; in most instances end-product and/or assembly costs can be reduced and quite frequently, product quality improved.

We would welcome an opportunity to explore with you the possibilities of J&L Restricted Specifications applied to your strip steel requirements.

THE 4 IN 1 SOURCE FOR YOUR

COLD ROLLED STRIP STEEL

Now there are four J&L plants with facilities for production of "Restricted Specification" cold rolled strip. Strategic locations at Youngstown, Indianapolis, Los Angeles and Kenilworth, N. J., provide the security of 4 sources of supply plus the close working relationship which these local production centers make possible.

SIZE 14 x .040
ANALYSIS 1095
FINISH Bright
HARDNESS 95 to 105 Rockwell B suitable for blanking
THICKNESS TOLERANCE ± .0005 incl. crown
WIDTH TOLERANCE ± .005
MICROSTRUCTURE Uniform medium size spheroids
COIL SIZE 16" — I.D. Max. coil wt. 600#
PACKAGING On skids — shrouded

J&L STEEL

Jones & Laughlin
STEEL CORPORATION
STRIP STEEL DIVISION
GENERAL OFFICES: YOUNGSTOWN 1, OHIO
PLANTS: YOUNGSTOWN • INDIANAPOLIS • LOS ANGELES • KENILWORTH, NEW JERSEY
SALES OFFICES: NEW YORK • ROCHESTER • NEWINGTON, CONN. • YOUNGSTOWN • CLEVELAND
DETROIT • INDIANAPOLIS • CHICAGO • LOS ANGELES • SAN FRANCISCO
FORMERLY THE COLD METAL PRODUCTS COMPANY

The Danger of Not Looking Ahead

There's danger that the businessman today may become too pre-occupied with today's events.

Tight business conditions force attention on short-term problems of costs and sales.

This may obscure the big things that are happening in the world that will have an impact on business.

▪ Is business thinking lagging behind world events? Indications are that it is, but understandably so.

The businessman's problems today are the urgent problems of an apparent business decline at home. It isn't that he doesn't read the papers, or listen to his Washington people. His short-term problems are those of the most urgency and tend to dominate his thinking today.

Beyond the Horizon — Furthermore, all of this missile talk is not readily translated into the solid facts that can be the basis of business forecasts. It is still talk, despite all the high level meetings and pleas for action.

So we have the paradox of bearish business news on one hand on the same day the Secretary of State hints of possible economic controls in the future. Even though Mr. Dulles was shouted down, the two just don't make sense.

Defense Economy — What the average businessman may not recognize is that the country is on the verge of again becoming a defense economy. The country can't spend the added billions for missiles that are talked about without new strains on the economy. Furthermore, there are indications that the figures are going to be well above those mentioned publicly.

Just looking at what's already on the record, you get an idea of what may be ahead. The Defense Dept. is apt to order into production not just either the Thor or Jupiter—but both of them. Plans now are to ring the U.S.S.R. with a circle of IRBM bases. And this is just the beginning of the missile phase of the Cold War.

Watch NATO—In this line, keep a close eye on the NATO meeting next month. There is little doubt but that the heads of state mean business. They are not apt to let intramural bickering stand in the way of bold, new plans. The IRBM bases will be part of these plans.

You don't have to be making missiles to see the impact of this new defense picture on business. This is no time to neglect the short-term factors in your business, but it's dangerous not to look ahead. Things are moving too fast today to be caught looking in a sideways direction, even if business does seem to be moving that way today.

How FRB Action Will Help

And Like It—Post-mortems on the Federal Reserve Board's somewhat easier money policy linger on.

Whether William McChesney Martin, Jr.'s hand was forced by the Administration, and few doubt that it was, business is looking hopefully for some reaction.

No Fast Reaction—This isn't apt to take place over night, but there are some areas that can benefit from the lowering of the rediscount rate. One is that smaller firms should be able to obtain somewhat easier financing.

Another area that can benefit is home building. Some financial experts expect at least a moderate improvement in supply of money available to finance home building at VA rates.

These aren't exactly supports to the economy, but they are shots in the arm. The Administration now is apparently convinced that a serious recession should not be permitted to take place at this time, for international reasons as well as domestic.

The President and/or his advisors became concerned over the indications of a recession, and the lowering of the rediscount rate was an important step in the direction of avoiding one.

Income Drops

Down a Billion—Probably the most serious danger signal reported this fall is the drop in personal income.

This is particularly important in the face of the impending demise of the capital goods boom. It had been hoped that consumer spending would fill the gap.

Personal income in October declined $1 billion from September, the second straight monthly drop. The Dept. of Commerce reports that most of the decline was in wages in manufacturing.

Foreign Cars Dent U.S. Market

Sales Reach 3 Pct and Are Still Growing

Most U. S. automakers have been well prepared for the foreign car invasion.

But you can look for still more transatlantic business deals.—By H. R. Neal.

■ Is the growing boom in foreign car imports causing American automakers to worry?

U. S. producers have developed a healthy respect for the dollar volume potential these cars represent. But there are few indications they are really worried.

Sales Skyrocket—Registration figures for the first three quarters of 1957 show 144,909 foreign cars sold in this country. This is more than double the 68,665 sales of the same 1956 period. It is interesting to note foreign car registrations exceed the combined total registrations of 131,447 of Nash, Hudson, Rambler, Studebaker and Packard for the same nine months of 1957.

In a recent month foreign cars accounted for nearly 10 pct of new car sales in the Salt Lake City, Utah, area. So far this year, foreign cars have accounted for more than three pct of auto sales in the U. S., against 1.5 pct a year ago. For the 1957 calendar year, sale of these cars is expected to reach 200,000 units.

Counter Measures—Major American automakers are cultivating this market with their own products or exclusive tie-ins with European car makers. Ford offers its English-built Anglia series of Anglia and Prefect, two-door and four-door sedans and two station wagon models; the Mark II series of Consul, Zephyr and Zodiac, each with a four-door sedan and convertible model.

General Motors has started importing its English-built Vauxhall Victor, handled by Pontiac dealers, and German-built Opel Rekord handled by Buick dealers. Each is a four-passenger, two-door sedan. American Motors Corp. imports the Metropolitan, specially built for it by Austin of England.

One Holdout—Studebaker-Packard Corp. has an exclusive U. S. distribution tie with the Mercedes-Benz line manufactured by Daimler-Benz of West Germany. It is also planning to market the bug-like Gogomobile, also German-made.

The English Ford and AMC's Metropolitan are among the top five sellers for the second year. GM's entries have just gone on sale.

That leaves Chrysler as the only company without a small car to its name. GM's decision to import the Vauxhall and Opel should add impetus to the market for small cars in the U. S. It also seems to have caught Chrysler flat-footed in its race to keep up with its competitors.

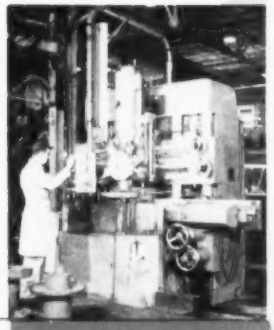
Two Alternatives—When questioned on its plans for a small car, Chrysler has repeatedly stated it is

Will Foreign Car Imports Double in 1957?

MORE COMING?: Economy is a major reason why foreign cars, like this 75 hp Borgward Isabella-Coupe are becoming more popular in the U. S. This West German-made car is linked in a possible international deal with Chrysler Corp.

Passenger Cars Imported

First 4 months 1956	30,965
Total, 1956	107,675
First 4 months, 1957	73,095
Total, 1957	?



36" Bullard Cut Master V.T.L., Model 75 manually controlled from Pendant Control.

no need for Obsolescence with **BULLARD**

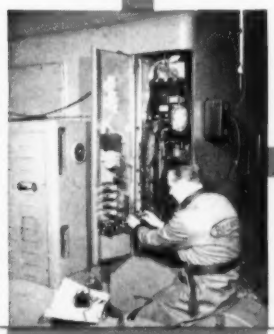
VERTICAL TURRET LATHES

Model 75

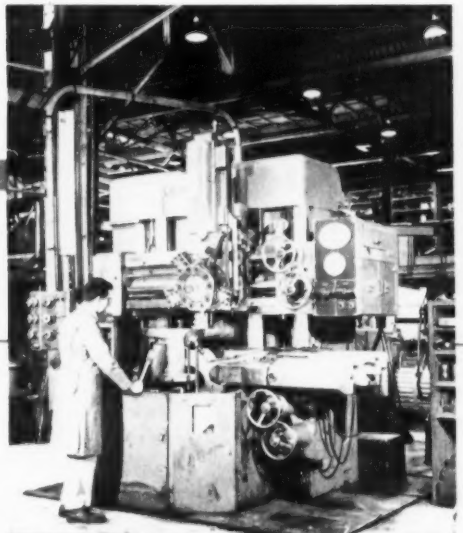
Bullard Service Engineer guides Man-Au-Trol Conversion Unit into place.

In May, 1955, Hyster Company, Peoria, Illinois, installed a 36" Cut Master V.T.L., Model 75 and by the end of 1956 it was evident that due to increased requirements an automatically controlled machine was necessary. *Did this obsolete the Cut Master?* — No sir — it only meant adding a Man-Au-Trol Conversion Unit to Cut Master *right in their plant. And it was accomplished in only four days.* No need to obsolete Bullard Cut Master, Model 75 — just convert them.

another way to cut costs when cutting metal — **buy BULLARD**



Electrical connections for Man-Au-Trol are wired into Cut Master Control Panel.



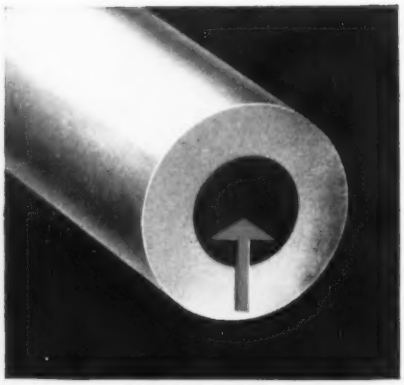
Man-Au-Trol installed for automatic control of Turret Head.

For the complete information on Bullard Vertical Lathes call our nearest Sales Office or Distributor.

THE BULLARD COMPANY

BRIDGEPORT 9, CONNECTICUT

a hole here is a hindrance...



a hole here is a help

Crucible Hollow Tool Steel sections, cut to length, save you time and money when you make ring-shaped, or tubular parts, or tools with a center hole. Because these tool steel sections are already drilled through when you get them, you don't have to bore, drill, cut-off or rough-face. Production time goes down, and most scrap losses are eliminated.

Five popular grades of Crucible tool steel are available immediately from warehouse stock, in hollow-disc form. They are KETOS oil-hardening, SANDERSON water hardening, AIRDI 150 high-carbon, high-chromium, AIRKOOL air-hardening, and NU-DIE V hot-work tool steels. Order the O.D. and I.D. combination, and length and thickness you need.

Let your Crucible representative show you how hollow tool steel sections can reduce production time, and save you money. *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

Canadian Distributor—Railway & Power Engineering Corp., Ltd.

Automotive Production

WEEK ENDING	CARS	TRUCKS
Nov. 23, 1957	153,917	23,373
Nov. 16, 1957	141,902	22,666
Nov. 24, 1956	118,949	17,296
Nov. 17, 1956	135,641	21,510
TO DATE 1957	5,474,117	990,373
TO DATE 1956	5,396,966	1,087,311

*Preliminary Source: Ward's Reports

studying the situation. This task belongs to vice president James C. Zeder, who has made a number of trips to European auto plants. The results of these trips and Mr. Zeder's recommendations to the company for a course of action are now being readied for presentation.

What will Mr. Zeder recommend? The IRON AGE was able to learn some points and reasons to be made in this hush-hush report. Mr. Zeder will recommend two possible courses of action. First, that the firm buy one of the going European automobile companies. Most of them are for sale. Or, second, that the company start from scratch and build an automobile manufacturing plant of its own.

Germany Is Favored — Another recommendation will be made that the plant or manufacturer be located in West Germany or Austria. He feels that political situation is stable enough to warrant location there. Evidently Mr. Zeder was not impressed with England's automakers or the country as a possible location for a foreign manufacturing subsidiary. The report will not carry even an alternate recommendation of England as far as could be determined.

It is fairly obvious that Chrysler does not intend a crash program to get into the foreign-car field. The report has been in the stages of preparation for several months and has yet to be presented to the company's policymaking board.

The Possibilities — Guessing Chrysler's final decision is far too speculative. Nearly, but not quite as hazardous, is speculating on the best bets should the firm decide to buy an established foreign car manufacturer. At least there are more pro and con indicators.

Both Borg-Ward and Auto Union, manufacturer of the DKW, have often been mentioned in connection with Chrysler. These German makes are fairly well established and believed to be available. The Borg is the larger car, more comfortable and thus more expensive.

One Stone, Two Birds — But Auto Union has an unmistakable factor in its favor, particularly for Chrysler. In addition to its West Germany facilities, it has made commitments to establish a truck and station wagon plant in Brazil—a prime market. But the Brazilian government discourages importing vehicles. Instead, it encourages manufacturing — particularly of trucks. Ford and GM either have or plan installations there. Chrysler has no such plans. By acquiring Auto Union, it could acquire that firm's Brazilian manufacturing rights at the same time.

Principal pressure on Chrysler to enter the economy car field is not the result of competition for the American market. It comes strongest from within the corporation itself. Chrysler's export division needs a small car to sell the rest of the world. The American market for a small car would just be so much gravy.

Small Car Advantages—Throughout the rest of the world the advantages of a small car are far more apparent than they are in this country. Economy of operation, a selling point for the small cars here, is imperative in France where, for example, gasoline recently soared to $1.10 a gallon.

License fees in many countries are based on horsepower. Import taxes are high. Export transportation costs go up with the size of the car. All of these factors tend to price larger American cars out of the export market. And Chrysler would like to get back into the world market as well as cash in at home.

THE BULL OF THE WOODS

I GOT A WEAK HEART AN' THESE SHOP "CUTUPS" WORRY ME! I DON'T DARE GO TO TH' MOVIES ANY MORE, I CAN'T STAND TH' SUDDEN CHANGES FROM COMEDY TO TRAGEDY! THEY HAD TO CARRY ME OUT ONE NIGHT--A CLOWN WAS PLAYIN' WITH A DEAD LION-- WELL, I WASN'T SURE HE WAS DEAD, AN' I---
OH, HE'S DEAD ALL RIGHT! THAT'S HOW A BOSS TAKES HIS BEAUTY NAP--THOUGHTFULLY! BUT IT'S RISKY AT THAT--TH' DOCTORS HAD 'IM UNDER ETHER (SIX CANS OF IT) AN' WAS HAVIN' A CONFERENCE AN' HE YELLS, "HEY, GET TO WORK!"
THE CAT AND THE MOUSE
T.M. Reg. U.S. Pat. Off.
© 1957 by NEA Service, Inc.

Dial Type Operating Conveniences

help the operator improve his performance

CINCINNATI

Ask the man at the machine. He'll tell you that built-in operating conveniences have a direct tie-in with costs. For example, consider a much appreciated Dial Type convenience like identification disks on control knobs. They jog the operator's memory; help him avoid wrecks between the cutter and work or fixture. Other CINCINNATI® Dial Type operating conveniences include:

Push-button selection of spindle speeds: in increasing or decreasing steps

Power feed change: in increasing or decreasing steps

Independent, directional controls: with palm-fitting plastic knobs

Dynapoise chatter-damping overarm: greatly reduces the noise of cutting action

Safe to operate: all hand cranks automatically disengaged when power feed or rapid traverse is engaged

Complete rear controls (Plain and Universal machines)

These are but a few reasons why Dial Type Milling Machines are tops with the operator. Want more information? Look in Sweet's Machine Tool File for brief specifications; complete data in catalog No. M-1915-2.

THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO

Brief Specs, Dial Type Milling Machines

DIAL TYPE LINE		table traverse	main drive	automatic table cycles available
No. 2	Plain	28"	10 hp	yes
	Universal			no
	Vertical			yes
No. 3	Plain	34"	15 hp	yes
	Universal			no
	Vertical			yes
No. 4	Plain	42"	20 hp	yes
	Universal			no
	Vertical			yes

RAPID TRAVERSE

TABLE

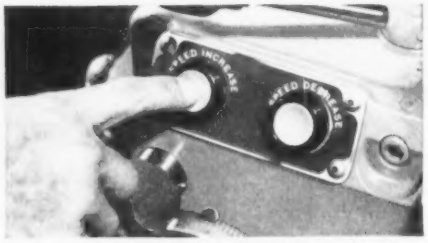
VERTICAL

CROSS

FEED SELECTOR

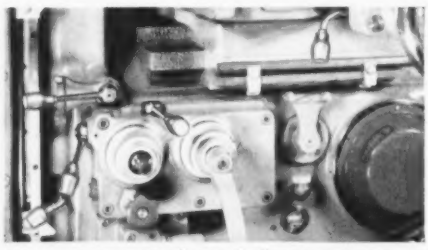
CLAMP

Identification disks on all control levers



Push-button selection of spindle speeds

Power selection of feeds, 3/8 to 90 ipm



Rear operating controls are duplicates of those located at front of machine. (Plain and Universal styles)

CINCINNATI

MILLING MACHINES • BROACHING MACHINES • CUTTER AND TOOL GRINDERS • SPECIAL MACHINE TOOLS • METAL FORMING MACHINES HARDENING MACHINES • CUTTING FLUID • GRINDING WHEELS

Get Set for 40 Pct Missile Hike

Air Force Request Tips Off Probable Pattern

Requests don't guarantee the appropriation, but Congress is in a defense-conscious state of mind.

Grass roots opinion demands missile action. Tax cuts will lose out.—By G. H. Baker.

▪ Here's how to gage the coming boom in Air Force spending for missiles: For the new fiscal year, the AF wants a minimum of $2.5 billion. (This year it is spending about $1.8 billion, representing almost a 40 pct boost.)

Quite a jump, as you can see. And this figure reflects only what the Air Force alone wants the Congress to appropriate. The Army and Navy have not yet disclosed what they are planning to ask in the way of new funds for missiles.

The disclosure on Air Force spending plans was made by Gen. Thomas D. White, AF chief of staff.

Get What They Ask — Even though there's many a slip between what government departments want in the way of spending money and what they eventually get, all three military departments are likely to get most or all of what they're asking in the way of money for missiles, rockets, satellites, and space travel.

Returning congressmen to Washington report that the temper of the voters is clearly for pulling out the throttle on all types of government missile-and-rocket programs. There seems to be little grumbling over the forfeiting of tax reduction.

People are demanding that the U. S. regain its place of world military leadership, and if it takes a "crash" program in missile-and-rocket technology to do this, they're willing to put forth the extra effort and the extra money.

Secretary of Science? — Here's new evidence of Washington's increased awareness of science and engineering: The Senate is to be asked early next year to create a new Cabinet position—that of "Secretary of Science."

Senator Humphrey, D., Minn., says he'll make such a proposal. The "Secretary of Science" would be head of the "U. S. Department of Science and Technology," and as such would have complete charge of all federal activities in the field of science, engineering, and advanced technology.

It's probably the boldest political program for upgrading the role of the scientists that has been suggested to date. If it is approved by the Congress (doubtful), scientific studies of all types will be greatly stimulated because of the funds and prestige of the federal government. And all such studies will be completely under the thumb of Washington.

Armed Forces Waste Engineers —One reason why the armed services frequently complain of being short of engineers and scientists is that much of their best brainpower is dissipated on noncreative work.

A survey of Army scientists and engineers showed that only 38 pct of an engineer's time was devoted to creative engineering projects. The balance of the time was lost on such non-productive tasks as ordering office supplies.

Now Up to 60 Pct—The Army now claims it has increased the productive time to 60 pct, and is shooting for 100 pct.

To obtain best utilization of its brainpower, the Army is finding that it must free its best people of housekeeping chores.

It Will Cost More to Build Next Year

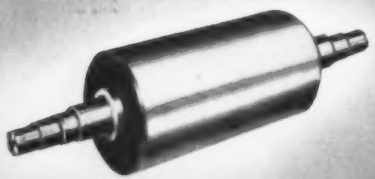
Labor and Materials—You can figure that your construction costs in 1958 will, on the average, run about 3 pct higher than for the same volume of work produced this year. It's due to both the higher cost of labor and the higher costs of materials.

Everything building contractors buy has gone up in price, the government is pointing out. Structurals, as well as other steel forms and shapes, cost more. Cement costs more. Building hardware has been marked up. And wages, of course, are higher up and down the line.

Climb Will Slow—Rate of cost increase will slow, however, during 1958. It is inevitable, now in late 1957, that the cost rise will continue throughout most of the new year, but the rate of climb will tend to diminish.

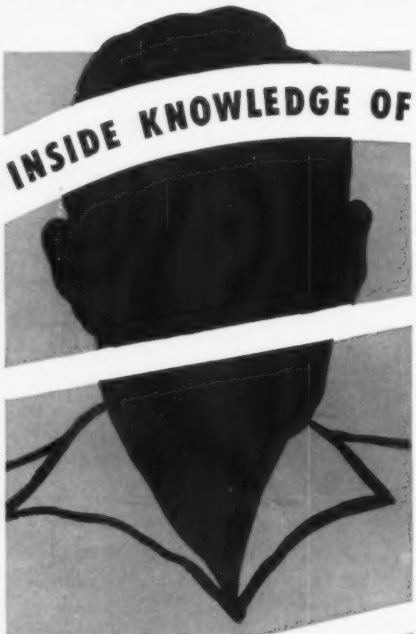
Next year, builders and contractors will not be faced with the same cost pressures that squeezed them this year. The government believes there will be a lot less push for wage increases, and, as a result, for price rises. The heat will still be on for higher costs, but the temperature will fall a little.

"Y.F.&M." builds the best of them!



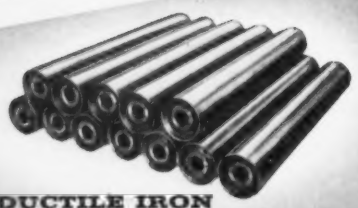
PARALLOY

HOT STRIP COILER ROLLS • COILER PINCH ROLLS
PICKLING LINE PINCH ROLLS • UPCOILER ROLLS
CLEANING LINE PINCH ROLLS • SINKER ROLLS
CARRIER ROLLS • TEMPER MILL TENSION ROLLS



INSIDE KNOWLEDGE OF STRIP MILL PROBLEMS

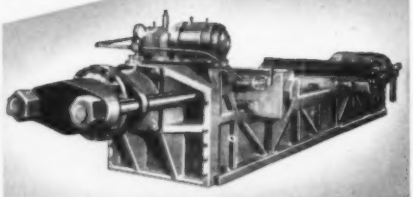
PLUS more than **70 YEARS EXPERIENCE** building what you need



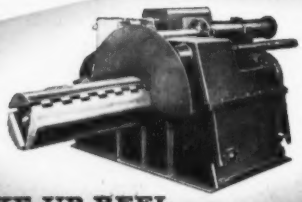
DUCTILE IRON

RUNOUT TABLE ROLLS
HOLDING TABLE ROLLS
LOOPER TABLE ROLLS
LOOPER TABLES
APRON PLATES

Ductile Iron Castings up to 50,000 lbs.

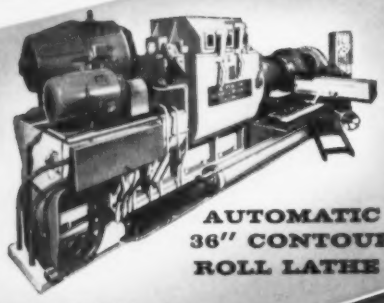


90" X 240" X 1/4" STRETCHER LEVELER



TAKE UP REEL

Complete Slitting Lines and Equipment



AUTOMATIC 36" CONTOUR ROLL LATHE

Other Capacities:
24"—48"—60"

YOUNGSTOWN

HOT and COLD STRIP MILL MAINTENANCE SPECIALISTS

"YOUNGSTOWN" service is based on thorough understanding of strip mill problems and experience in solving them. For example, the problems of scratching, galling, pickup and excess wear are solved by the use of **PARALLOY ROLLS.** Their uniform hardness all through means you can roll more tonnage from new to scrap diameter. **"YF&M" DUCTILE IRON ROLLS** are the proven answers in overcoming heat check, warpage and cracking . . . especially good under the sprays. **"YOUNGSTOWN" MACHINERY** serves major steel mills from coast to coast.

Consult us about your problems.
Let us quote on your requirements.

The Youngstown Foundry & Machine Company

SERVING INDUSTRY SINCE 1885

Youngstown 1, Ohio

Coast Steel Buying Sets Record

▪ Steel mill shipments to users in the seven Farwestern states this year will hit a record 7 million tons.

Why will the region chalk up a new high when shipments to consumers nationally may drop below last year? Here are the reasons:

The farwest has some very stable steel-consuming industries.

Steel buyers there have built high inventories. When the long-time seriously short items—plates and wide flange beams—broke loose not long ago, they stashed away plenty.

Where It Goes — That's what Kaiser Steel Corp. points up in its annual survey, "A Report to Farwestern Steel Purchasers." The study shows 1956 steel mill product receipts of 6.84 million net tons. And the company predicts 7 million tons for 1957. Every product group, except some tube, shares in the growth.

Here's a rundown of the consuming areas in the seven Farwestern states: Lion's share of steel mill products, 43 pct, still goes to southern California; nothern California is in a firm second spot with 31 pct; Oregon and Washington, 16 pct; and Arizona, Utah, Idaho, and Nevada, 10 pct.

Who Uses It—Mill shipments to warehouses run 24 pct. That's 5 pct higher than the national average.

Fabricators take 20 pct of Farwestern production. Their biggest need is for structural shapes and bars. And they use a large amount of plate.

Manufacturers, railroads, and the petroleum industry consume the remaining 56 pct.

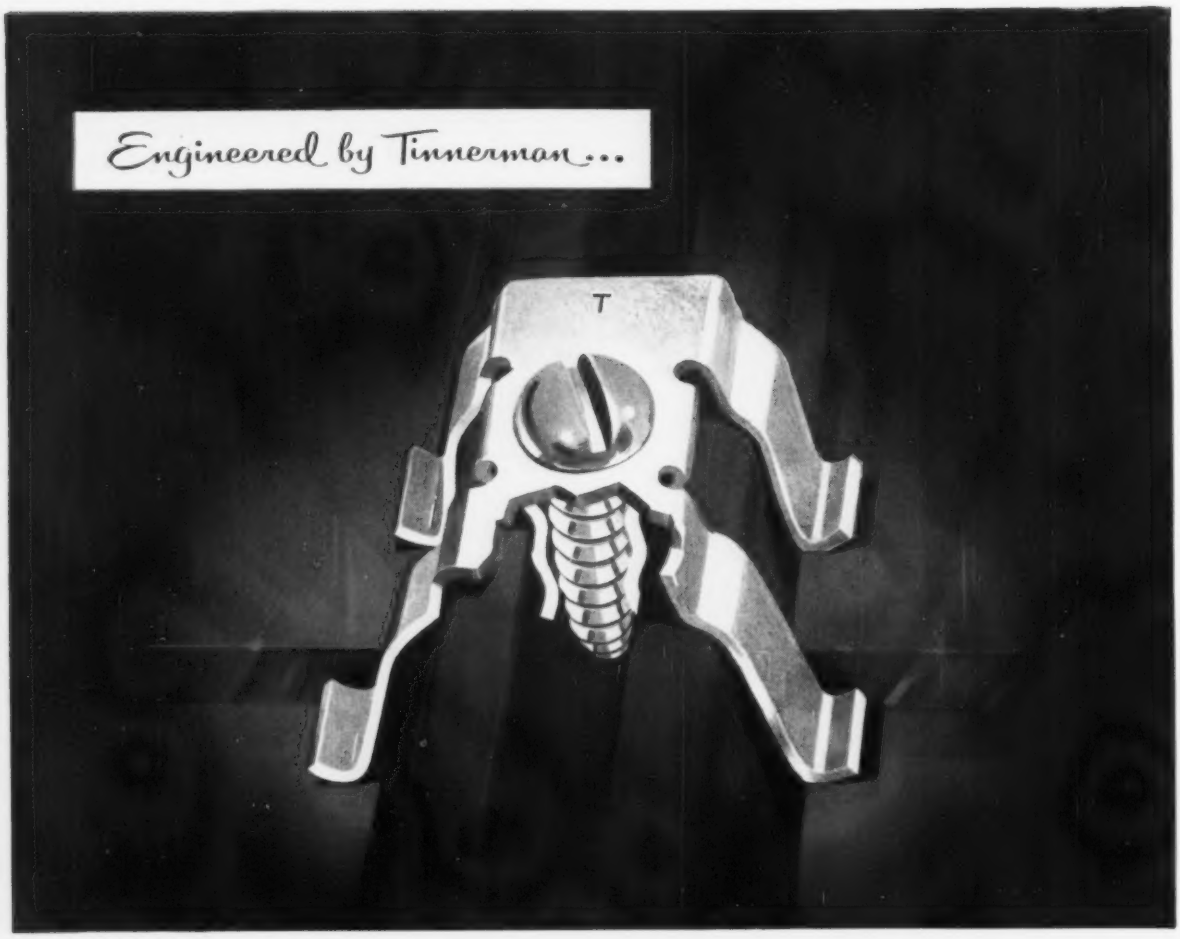
How Steel Mill Products Were Distributed Among 7 Western States in 1956

NET TONS

STEEL MILL PRODUCT	Total Seven Western States	Southern California	Northern California	Oregon & Washington	Arizona, Utah, Nevada & Idaho
Plate					
Sheared Plate	991,000	298,000	308,000	116,000	269,000
Universal Mill Plate	52,000	23,000	10,000	17,000	2,000
Structural Shapes					
Wide Flange Beams	219,000	91,000	68,000	42,000	18,000
Standard Structural Shapes	375,000	169,000	81,000	77,000	48,000
Hot Rolled Bars & Bar Size Shapes					
Carbon	440,000	205,000	109,000	94,000	32,000
Alloy & Stainless	89,000	70,000	9,000	9,000	1,000
Concrete Reinforcing	560,000	228,000	162,000	129,000	41,000
Hot Rolled Sheet	520,000	314,000	113,000	58,000	35,000
Hot Rolled Strip	76,000	47,000	16,000	8,000	5,000
Cold Rolled Sheet	388,000	258,000	100,000	26,000	4,000
Cold Rolled Strip	36,000	24,000	8,000	3,000	1,000
Standard & Line Pipe					
Pipe, ½"-4"	374,000	185,000	73,000	75,000	41,000
Pipe, 5⁹⁄₁₆"-12¾"	183,000	75,000	32,000	52,000	24,000
Tin Mill Products	1,150,000	256,000	666,000	207,000	21,000
Galvanized Sheet	275,000	112,000	70,000	54,000	39,000
All Other Mill Products	1,112,000	560,000	258,000	158,000	136,000
Gross Total	6,840,000	2,915,000	2,083,000	1,125,000	717,000
Adjustment for Conversion*	121,000				
Net Total	6,719,000				

Source: Kaiser Steel Corp.

* Steel Mill Products received by consumer and converted into other mill products have been subtracted from the total to avoid duplication.



6-fingered **SPEED CLIP**®
holds glass panels tight, saves 46%!

This special SPEED CLIP fastens glass panels to aluminum extrusions with a grip that prevents slippage. Heat stays in, rain stays out of greenhouses and similar glass structures. Working closely with engineers of the Metropolitan Greenhouse Mfg. Corp., Brooklyn, Tinnerman developed this unique fastener that saves almost one-half the cost of former less effective assembly methods!

Installation is fast and simple. Two overlapping glass panels are positioned against the extrusion. A screw driven into the spring-steel SPEED CLIP spreads the two center fingers outward to grip the inner walls of the extrusion. No secondary fastening devices required. SPEED CLIPS hold tight, yet are easily removed to permit replacement of glass.

This is another example of a fastener engineered by Tinnerman to satisfy special, complicated fastening problems. A Fastening Analysis of your products may produce a similar cost-cutting solution. See your Tinnerman representative soon.

TINNERMAN PRODUCTS, INC.
BOX 6688 • DEPT. 12 • CLEVELAND 1, OHIC

TINNERMAN

Speed Nuts®

FASTEST THING IN FASTENINGS®

CANADA: Dominion Fasteners Ltd., Hamilton, Ontario. GREAT BRITAIN: Simmonds Aerocessories Ltd., Treforest, Wales. FRANCE: Simmonds S. A., 3 rue Salomon de Rothschild, Suresnes (Seine). GERMANY: Mecano-Bundy GmbH, Heidelberg.

New Tool Does Job of Three

Tape-controlled Drill Also Cuts Labor Costs

Barnes drilling machine solves tricky problem of handling multi-holed casings at GE plant.

Unit replaces three manually-operated boring mills, eliminates chance for errors. — By E. J. Egan, Jr.

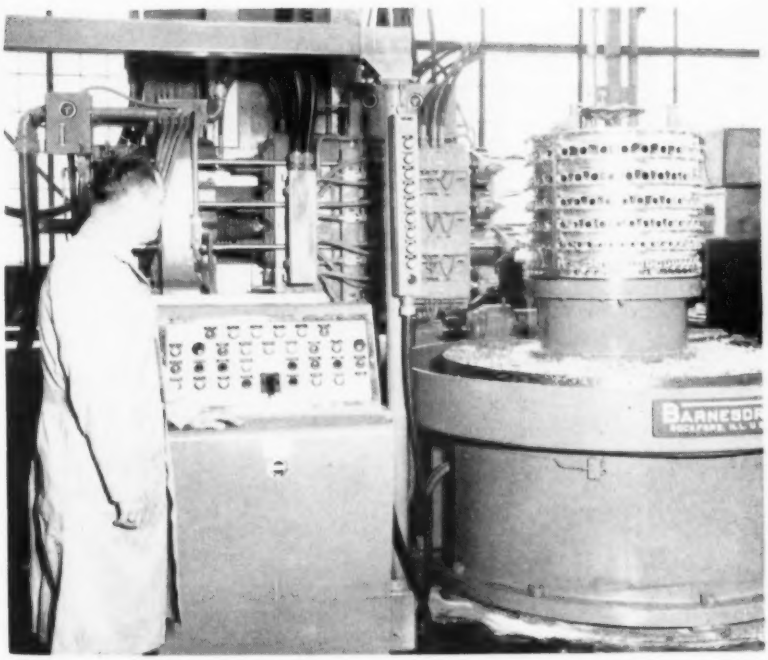
■ When one new machine tool can replace three others and bring estimated direct labor savings of 74 pct, almost any one would call it a good buy.

These are the chief benefits General Electric Co.'s jet engine plant at Evendale, O., expects from a new machine it just bought. It's a numerically-controlled automatic drilling machine built by Barnes Drill Co., Rockford, Ill.

Four Spindle Tool—Slated to do a tricky job of boring, spot facing and counter-boring holes in jet engine compressor casings, the punched-tape-guided tool has four horizontal spindles aimed at the work space above a rotary table. It's the brain child of joint engineering and design effort by both Barnes and another GE branch: The Specialty Control Dept. of Waynesboro, Va.

There's plenty of work lined up at Evendale for all four spindles on the new machine. Each compressor casing has 248 holes around its periphery. Up to now, three manually operated boring mills have been doing the necessary hole-finishing operations. Setup time has been a big item, involving costly jigs and fixtures.

Orders From Tape—As for machining, well—even the best operators make mistakes. It's no joke to bore 200 holes "just so," and then discover that some chance error caused the 201st to turn up in the wrong place. It happens—and it means a scrapped casing.



FAST DECISION: Control system of Barnesdril numerically-controlled borer selects exact machining position, hole size and depth in about 2 seconds. Unit machines 248 holes in compressor casing.

Acting under orders from its punched paper tape, the new machine won't let any of its four tools touch the workpiece unless everything is in order. This means that the rotary table which holds the casing must be indexed to within ±0.0015° of arc. Also, the tool must be within ±0.005 in. of its assigned vertical position. In trial runs, the machine has performed well inside these limits.

Busy Control System—Actually, the GE numerical control system, directed by coded data stored in the standard 8-hole punched tape, regulates many other machine functions. These include spindle advance, speed and feed; depth of tool penetration; whether to position the tool only or actually take a cut; selection of dwell, no-dwell and backfeed combinations.

Engineering Changes Are Easy—The control system also blends speed with its accuracy. It selects exact position, hole size, and depth in about two seconds. All positioning, of both the rotary table and the four spindles, is done from a single reference point in each case. This eliminates the question of acumulated error. Engineering changes or wholly new parts can be handled by punching new tapes.

INDUSTRIAL BRIEFS

Welding Awards—The James F. Lincoln Arc Welding Foundation's annual mechanical and structural design competition offers 46 cash awards to undergraduates. Top award is $1250. Awards are made in two separate competitions, one for mechanical designs and one for structural designs. Awards will be offered for the best designs of a machine, machine part, structure or structural component which makes a significant use of welding. Rules are available from the foundation in Cleveland.

New Conveyor Corp. — The National Engineering Co., Chicago, has formed the National Air Conveyor Corp. New corporation will operate as a wholly owned subsidiary. It will be engaged in the design, engineering and manufacture of pneumatic conveying equipment, for the transport of bonded materials in the foundry. The new firm will be located in Chicago and will be represented by sales engineers located in principal cities throughout the U. S.

Engineering Societies Move — Plans are now in progress for a new $10 million United Engineering Center, to be erected on United Nations Plaza between 47th and 48th Sts., New York City. The facility will serve as the headquarters of 16 National Engineering Societies with a total membership of about one-quarter of a million engineers. The building will replace the present Engineering Societies Bldg. at 29 W. 39th St.

Group for Re-action—The formation of a new group, the American Power Associates, of private industrial and utility companies, has been established. Plan of the new group is the initial design of a radically new—temperature, high-performance nuclear power plant. This plant will be based on Raytheon Mfg. Co.'s Liquid Metal Fuel—Gas Cooled Reactor concept.

Mysteries of the West — The Weirton Steel Co., Div. of National Steel Corp., is giving a year's training in steel mill operations to 15 young engineers from India. They are part of a group totaling 200 who will receive training from seven American steel companies during the coming year. Almost all of the trainees have engineering or science degrees from Indian universities, and all speak, read and write English.

Solid Citizen—C. E. Smith, assistant to the general sales manager, Pratt & Whitney Co., Inc., of West Hartford, Conn., has been elected president of the Solid Carbide Institute. The national organization is headquartered in New York and is composed of 15 prominent industrial companies which manufacture solid carbide tools.

Up the Hudson—Daystrom, Inc., Murray Hill, N. J., has formed the Daystrom-Weston Industrial Div. at Poughkeepsie, N. Y. New division will be part of the Daystrom Controlonics Group. It is to include the production of industrial instruments now located at Daystrom Electric, Poughkeepsie, and the recorder-controller activities of Weston Electrical Instrument Corp., Newark, N. J.

Blaw-Knox Looking Up — A giant radio telescope is being built and designed for the University of Michigan by the Radio and Antenna Dept. of Blaw-Knox Co., Pittsburgh. The sky-scanner is expected to contribute important findings to the International Geophysical Year. The 85-foot-in-diameter parabola shaped instrument will be the largest in the country.

Battle of Washington — C. W. Messinger, sales executive for Allegheny-Ludlum, is now serving as a special consultant to the Iron and Steel Div. of the Commerce Dept.'s Business and Defense Services Administration. BDSA, under a 1957 act of Congress, will have to replace all industry without compensation (WOC) division directors with full-time, paid directors on or soon after Jan. 1.

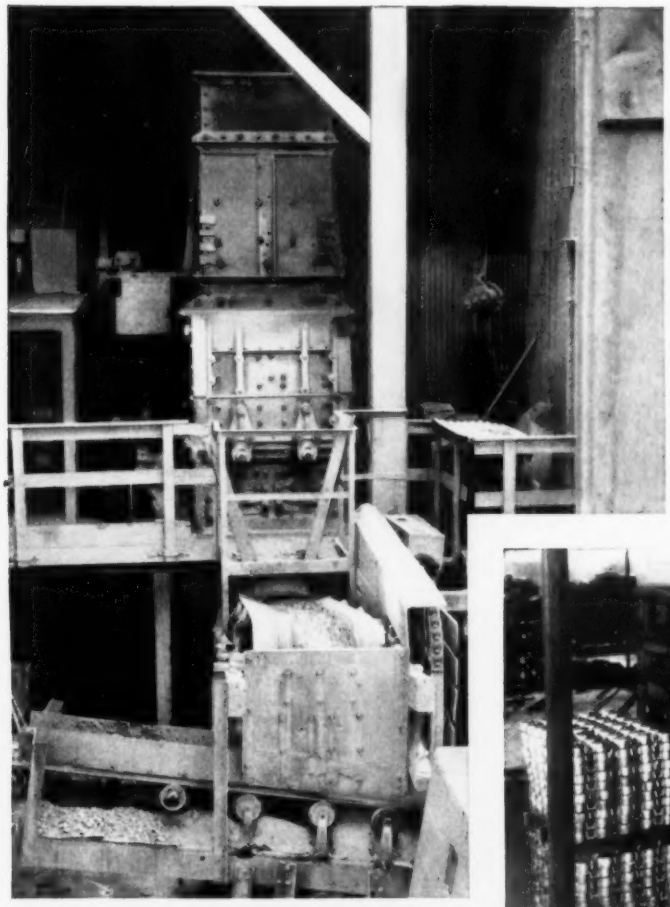
Return to Rutile—Metal & Thermit Corp. has marked its re-entry into the domestic rutile and ilmenite market. The corporation has opened its new mine and ore processing plant in Hanover county, near Richmond, Va. It represents an investment of over $1.2 million. By 1958 it is expected that the Hanover plant alone will supply 12 pct of the U. S. rutile requirements.

Congratulations — The No. 560 Pressafiner, a new type screw press recently announced by The Bauer Bros. Co., Springfield, O., has won honorable mention in national competition for improvement of industrial machinery design by the use of arc welding. The Bauer machine features a rugged one-piece weldment base for extra strength. Competition was sponsored by the James F. Lincoln Arc Welding Foundation of Cleveland. The paper describing the device was entered by Bauer's M. E. Ginaven and J. L. Ostborg.

Juicy Contract—A 100,000-kw turbine-generator will be built by Westinghouse Electric Corp. for the Public Service Co. of New Hampshire. It will equip a new power station located on the Merrimack River about 15 miles north of Manchester and will increase total power output by 30 pct. Westinghouse will supply a condenser and electrical equipment for the station, bringing the total value of the apparatus to nearly $4 million. Both units are scheduled for delivery in 1959.

No Bears at B-W—Calumet Steel Div., of Borg-Warner Corp., will undertake a multimillion dollar expansion and improvement program at its facilities in Chicago Heights. The program will be divided into two stages. First will increase capacity by at least 40 pct, improve product quality, broaden the product line, reduce costs and make possible 24-hour-a-day operation. Second phase contemplates the installation of electric furnaces and additional rolling and finishing facilities. The program is scheduled for completion by mid-1961.

Experience-proved products pay off



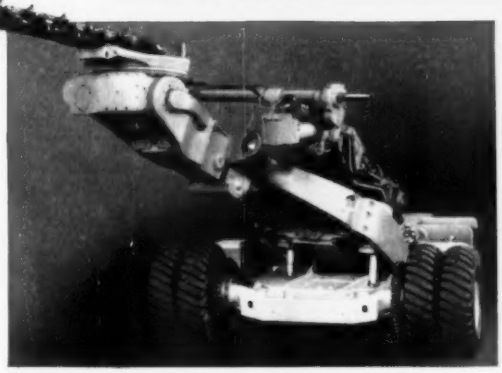
30 years of service—

crushing 175 tons of primary rock per hour—hasn't forced this Jeffrey crusher into retirement. Instead, it's moving into a new job as Diamond Portland Cement Co., Middlebranch, Ohio, expands facilities to crush 400 tons of rock per hour.

This calls for a new system, including a new 42" x 82" Jeffrey reversible impact crusher. The old timer is being converted —new hammers and screen bars—to crush the shale that's used for blending purposes. Proving again that Jeffrey crushers have stamina.

Reserve strength

necessary for hard work and sudden overloads is built into Jeffrey STR (Steel Thimble Roller) chain. Jeffrey's own high-quality equipment uses it for dozens of power transmission and conveying applications. Other manufacturers incorporate Jeffrey STR as original equipment on machines they make. For dependable, long-lived chain see your nearby Jeffrey distributor or district office.



Pigs are cast

continuously in this Jeffrey machine, then automatically ejected from the molds. Production proceeds at a rapid rate, requiring a minimum of labor. Aluminum, magnesium, lead, brass—Jeffrey builds pig casting machines to suit any requirement.

Whether you're building new equipment, modernizing old or planning an entirely new plant layout, Jeffrey experience-proved products help you do it better. Available through Jeffrey distributors in principal cities.

JEFFREY

Founded in 1877

THE JEFFREY MANUFACTURING COMPANY • COLUMBUS 16, OHIO

CYLINDRICAL APPLICATIONS:

UNLIMITED

Sandusky Centrifugal Castings offer you 4 Important Advantages

1. Superior mechanical properties to meet exacting design requirements
2. Uniform soundness—free from harmful inclusions and porosity
3. Highest quality—to insure long, dependable, trouble-free service
4. Job-ready castings—machined to your exact specifications

More and more design engineers are realizing that new applications for centrifugal castings are *unlimited* . . . thanks to new knowledge about alloys . . . new casting and machining techniques and facilities.

From simple bushings to atomic reactor components . . . from bronzes to heat, corrosion, and abrasion resistant stainless steels . . . from 7" to 54" O.D. and lengths to 33 ft.—Sandusky centrifugal castings are providing gratifying results in scores of applications, many unheard of a few years ago.

What cylindrical or piping problem can we help you solve? . . . Code pressure vessels? . . . Reactor vessels? . . . Power Piping? . . . What is your problem?

Your inquiry will bring more information promptly . . . or, if you prefer, a personal call by one of our engineers.

CENTRIFUGAL CASTINGS

Sandusky Foundry & Machine Company

SANDUSKY, OHIO • Stainless, Carbon, Low Alloy Steels—Full Range Copper-Base, Nickel-Base Alloys

L. J. Cox, elected president, Iron Fireman Mfg. Co., Cleveland.

L. F. Rozesky, elected vice president, Summer & Co., Columbus, O.

C. M. Blair, appointed vice president, planning, Bakelite Co., Div. of Union Carbide Corp.; **L. K. Merrill,** appointed vice president, technical; **K. H. Rowland,** appointed vice president, production, Union Carbide Chemicals Co.

G. A. Paul, appointed comptroller, American Steel & Wire Div., U. S. Steel Corp.

E. F. Mitchell, appointed vice president and general manager, Vitrified Wheel Co., Westfield, Mass.

B. B. Loring, elected executive vice president and treasurer, Seaporcel Metals, Inc., Long Island City, N. Y.

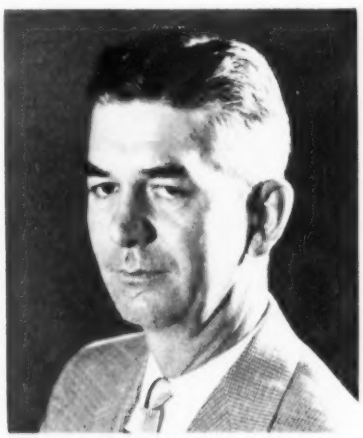
H. R. Black, appointed general sales manager, U. S. Steel Homes Div., U. S. Steel Corp.

S. G. Harris, appointed asst. comptroller, American Steel & Wire Div., U. S. Steel Corp.

L. M. Ferguson, appointed vice president, sales, Vulcan Containers Inc.; **E. W. Gehm,** appointed asst. sales manager.

J. C. Kelley, appointed development chemist, New Product Development Laboratory, General Electric Co., Pittsfield, Mass.

R. M. Middleton, appointed product sales manager, Standard Control Div., Westinghouse Electric Co., Beaver, Pa.; **W. G. Caputo,** named field sales manager, Lighting Div., Cleveland.



H. C. Carless, appointed asst. general manager, Terre Haute, Ind. Works, Allis-Chalmers Mfg. Co.

Irwin Schlosser, appointed asst. to the president and **J. J. Flynn,** named vice president, sales, Central Foundry Co., Holt, Ala.

L. D. Whitescarver, appointed manager, sales, Region Three, Large Steam Turbine - Generator Dept., General Electric Co., Schenectady, N. Y.

J. G. Wortley, appointed general manager, Kenilworth, N. J. plant, Strip Steel Div., Jones & Laughlin Steel Corp.; **W. H. Rees,** named asst. general manager, sales, Strip Steel Div., Youngstown, O.

H. G. McLaughlin, appointed manager, industrial engineer, Aluminum Div., Kaiser Aluminum & Chemical Corp.

Arnold Jensen, appointed manager, marketing, Conduit Products Dept., General Electric Co., Bridgeport, Conn.

H. A. Muttach, promoted to works manager, Granite City Steel Co., Granite City, Ill.; **F. J. Burgert,** promoted to divisional superintendent, coke ovens, blast furnaces, openhearth furnaces and foundry; **J. F. Tepolt,** promoted to superintendent, Cold Strip Dept.

G. L. Moran, appointed general manager, Chemical and Metallurgical Div., Sylvania Electric Products Inc., Towanda, Pa.; **Henry Mc-**

SCIAKY®

HELPS PUT PROFIT
INTO MANUFACTURING

Sciaky Techniques Provide Strength, Finish and Balance Critical to Profits in Fabricating Cleaning Drums

The advantages of strength, surface finish, weight reduction, corrosion and distortion resistance, leakproofing, etc., can actually be "welded" into a wide range of assemblies when proper resistance welding techniques are used.

A good example is the Western Laundry & Machinery Co., North Kansas City, Mo., manufacturers of dry cleaning equipment for automatic soaking, washing, and spin drying clothing. They adopted Sciaky Resistance Welding Techniques for assembling the cleaning cylinder and other components because *high strength, smooth finish* and *delicate balance* were essential qualities for optimum performance.

Welding Cylinder Assembly

The use of Sciaky Resistance Welding Techniques enables the cleaning cylinder assembly to withstand these difficult operating conditions:

- Rotation speeds exceed 90 miles per hour . . . and a full load of soaked clothing exerts a centrifugal force of 41,600 lbs. on sides of the cylinder. *Sciaky resistance welding techniques provide the STRENGTH required—at least as strong as either of the metals welded together!*
- To protect clothing in cylinder, there must be absolutely no rough surfaces. To verify this, all surfaces are rubbed with a 51 gauge silk stocking after assembly. *Sciaky resistance welds are practically invisible, providing exceptionally smooth surface finishes!*
- The cylinder must be perfectly balanced to prevent flying to pieces in operation. *Sciaky resistance welding virtually eliminates warpage and distortion and adds no weight to assembly!*

Broad Use of Resistance Welding

In addition to the cylinder assembly, Western Laundry uses the same Sciaky Patented Three Phase Resistance Welder to perform seven other fastening jobs in the manufacture of this dry cleaning machine.

This broad use of resistance welding in a single product results in *improved* performance standards—enables this equipment to handle bigger cleaning loads faster and more profitably. Sciaky Resistance Welding Techniques help Western Laundry back up their claim that these dry cleaning machines represent lifetime purchases.

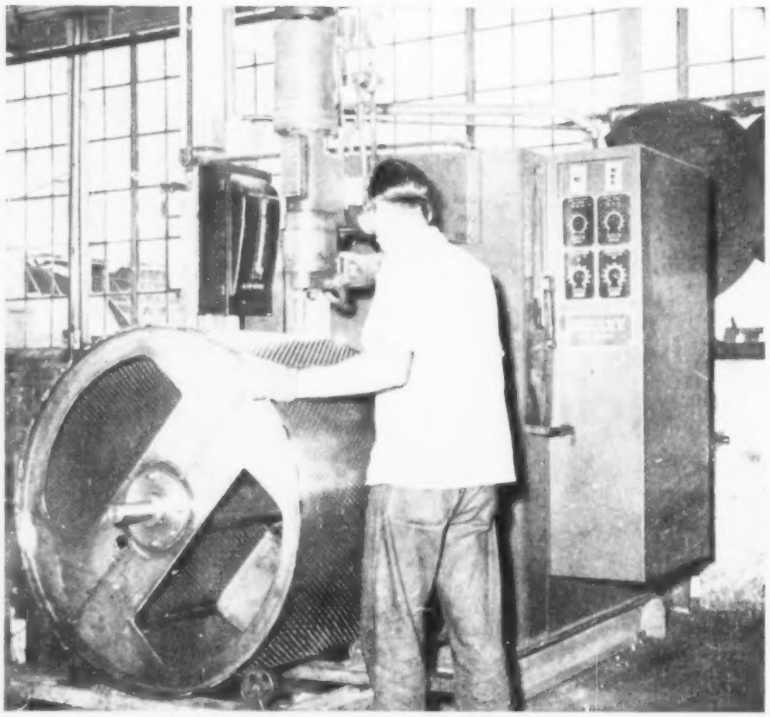


Fig. 1 Joining 12 gauge cold rolled, perforated steel cylinder wrapper to housing. Welding is accomplished at flanged edge of head. The wrapper is formed in two semi-circles. The ends of the semi-circles butt against projecting edge of two partitions. This joint is fused with an arc welding torch.

Formerly, all the fastening jobs were performed by costly riveting and fusion welding methods—which limited the operating efficiency.

Never a Breakdown

Western Laundry reports they have *never* had a breakdown of consequence since they installed their Sciaky resistance welding equipment in 1951.

Information Available

Case histories outlining the successful use of Sciaky Resistance Welding Techniques are available on request. Specific recommendations will be furnished on receipt of an outline of your requirements.

Write today, mentioning the information you would like to receive. No obligation. Sciaky Bros., Inc., 4923 W. 67th St., Chicago 38, Illinois. POrtsmouth 7-5600.

60D

DO YOU HAVE A RESEARCH PROBLEM?

Facilities of the Sciaky Research Division at Los Angeles, California, are available for contract research to answer resistance welding problems. Write for further information and ask for 20 page Research Division brochure.

Connell, appointed manager, wire plant in Warren, Pa.

D. R. McKay, appointed director, communications, International Business Machines Corp., New York; **D. N. Jones,** named director, personnel, Data Processing Div.

G. D. Nahm, named asst. purchasing agent, The Carpenter Steel Co., Reading, Pa.

J. W. Luke, appointed asst. manager, marketing, Military Products Div., International Business Machines Corp., New York.

T. P. Clements, appointed national service manager, Admiral Corp., Chicago.

K. W. Matthes, appointed divisional staff engineer, General Planning Div., Kaiser Steel Corp.

Following appointments are within the Union Carbide Olefins Co., Div. of Union Carbide Corp.

if you're using special fasteners...

...you should be using APEX SOCKETS

Typical Apex nut setter and sockets designed for use with special high-speed, resilient fasteners. Note recesses in outer walls to accommodate fastener prongs; integral magnets to help speed assembly. Openings near drive ends of sockets serve to dispel minute particles from rubber seals on fasteners.

Today's assembly techniques frequently require special types of fasteners. On one assembly line, speed may be the important factor . . . on another, a resilient fastener may be needed to protect brittle or highly-finished components . . . still another may require a self-locking or vibration-proof fastener.

Each application creates its own problem to be solved with a special fastener. And each special fastener can be run down—quickly, smoothly, economically—with an Apex socket specifically designed for the job.

Apex, where special nut running problems are solved every day, has the answer to your fastening problem, routine or special. In our Catalog 29-R, you'll find over 5,000 types and sizes of standard nut running tools and a frequently-repeated note that reads, "We quote promptly on specials." Write, on your company letterhead please, for your copy.

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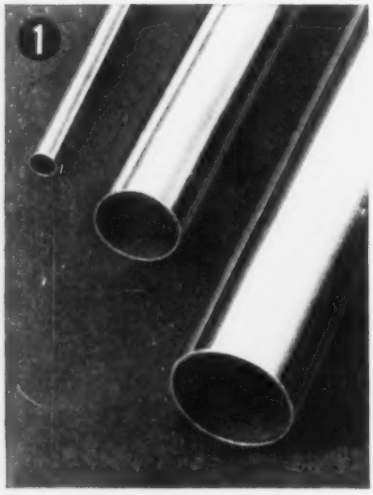
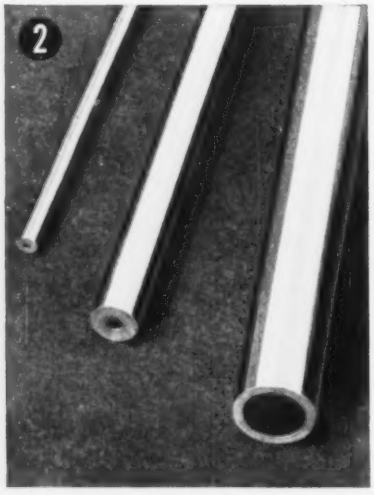
TUBEXPERIENCE IN ACTION

TO MEET YOUR NEEDS Superior application...UNUSUALLY WIDE





Take advantage of Superior's unequalled variety of instrument tubing. Now you can select tubing from a wide choice of analyses (over 120), sizes, shapes, and mechanical properties. All tubing is produced to extremely close tolerances, finished with bright, clean, uniform surfaces.

1 Mechanical Tubing—Instrument Line

Produced in both seamless and Weldrawn forms, generally to meet such requirements as special OD-ID or ID-wall limits; special analysis or heat selection; controlled mechanical properties; and special finishes. Extra-long straight or coiled lengths or specific cut or multiple lengths. Cut and multiple lengths up to 39 ft. maximum. Coil lengths up to 500 ft., depending on material and size desired.

2 Pressure and Super Pressure Tubing

Made from specially selected raw materials which have had inside surfaces conditioned to remove fissures and other defects. Produced in stainless, carbon and alloy steels to carry pressures as high as 100,000 psi. Finished tubing must meet special inspection standards. Super pressure tubing is available in single wall, which will give long reliable service at lower working pressures, or in composite wall to withstand higher pressures. Used in hydrogenation process equipment and high pressure autoclaves.

3 Bourdon Tubing

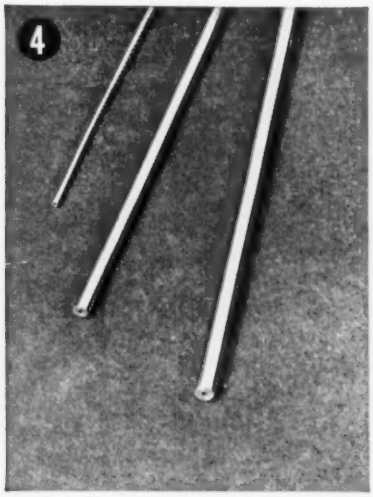
Superior's wide range of alloys and sizes makes it possible to satisfy any set of service conditions—such as high strength, low hysteresis, corrosion resistance, etc.—for Bourdon tubing in indicating and recording instruments. Many different analyses to choose from, including Ni-Span C. Helix and spiral as well as "C" tube elements are fabricated from the many analyses which Superior offers. Smooth, clean surfaces, close dimension control, freedom from decarburization, accurate shaping and cleanliness, all combine to produce Bourdon tubing of unexcelled quality.

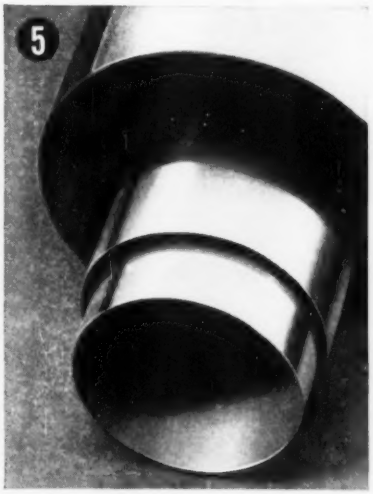
4 Capillary Tubing

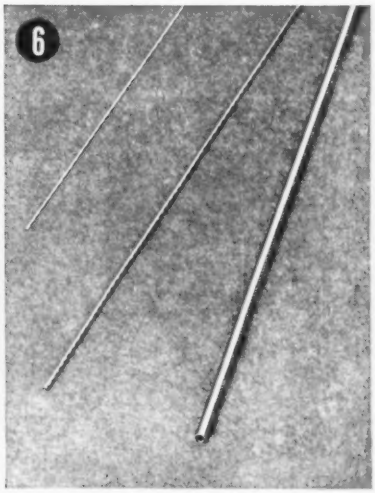
Superior capillary tubing is used for transmitting temperature and pressure impulses from the source to a recording or indicating instrument. Any outside diameter can be produced up to and including $\frac{3}{16}$ in. OD. IDs range from .004 in. minimum to .080 in. maximum. Has smooth ID, extreme ID uniformity, excellent corrosion resistance, and is easy to weld, braze or solder. Types 304, 316, 321, 347 and 446 stainless, Monel, Inconel, nickel

produces 6 types of tubing for any instrument

RANGE OF SIZES AND ALLOYS







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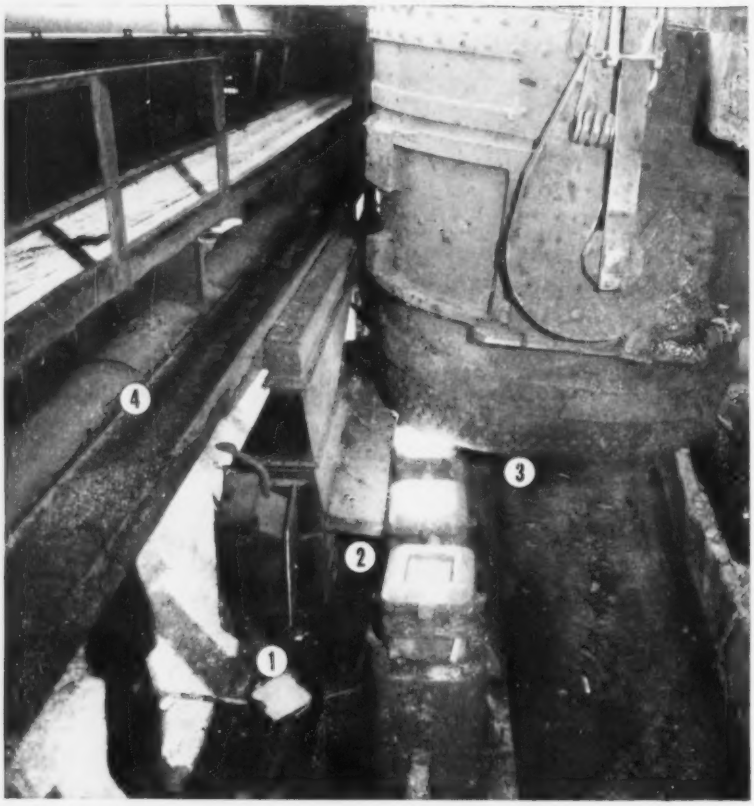

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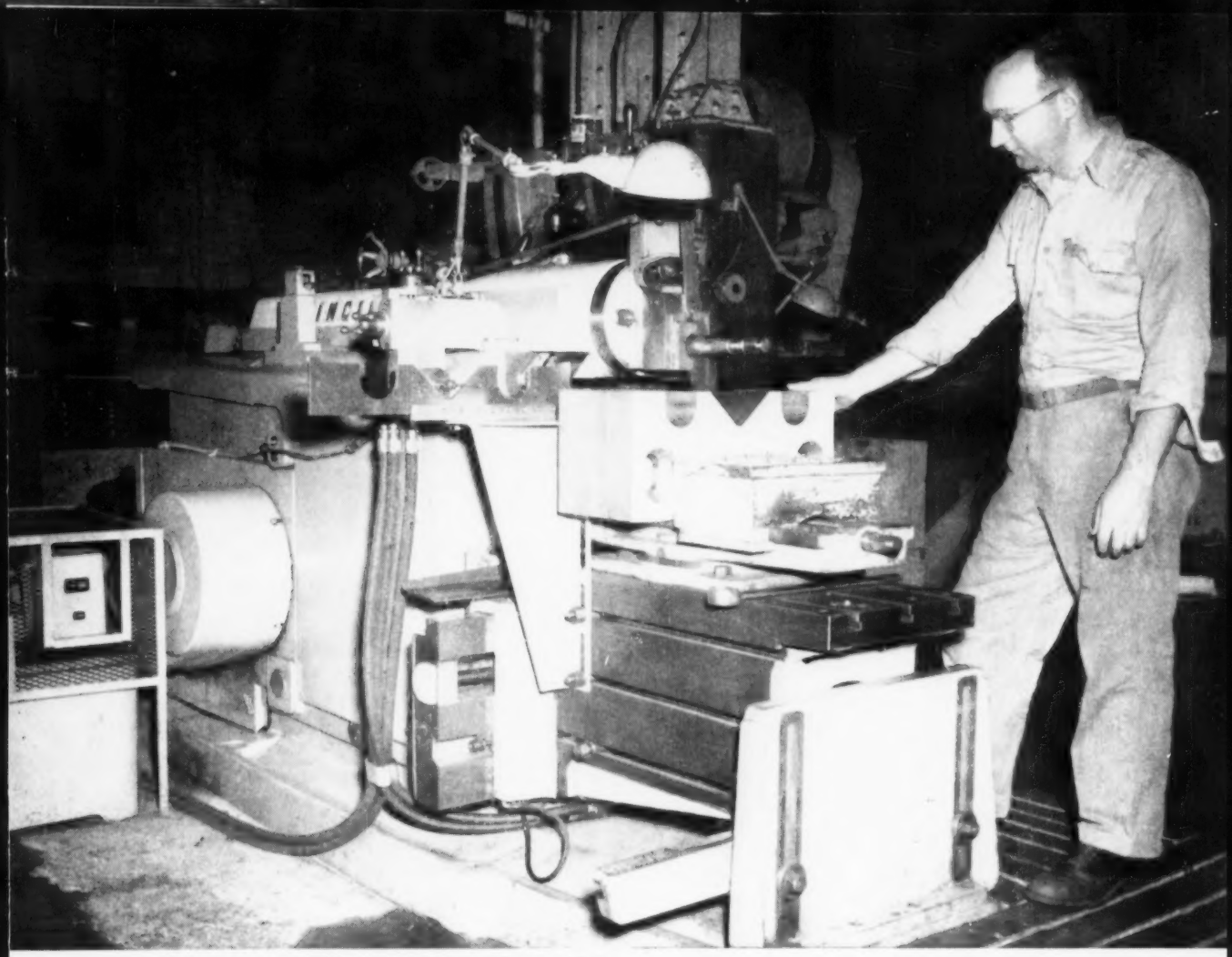

Photograph courtesy of Heppenstall Company, Pittsburgh 1, Pa.

High-alloy shear knives machined on accurate Cincinnati Rigid Shaper...

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This Cincinnati 36" Rigid Shaper, equipped with an automatic contouring unit, is machining high-alloy steel shear knives. These knives will be used to cut 3" round-cornered squared billets and 2½" rounds, by a leading Midwestern drop-forge company.

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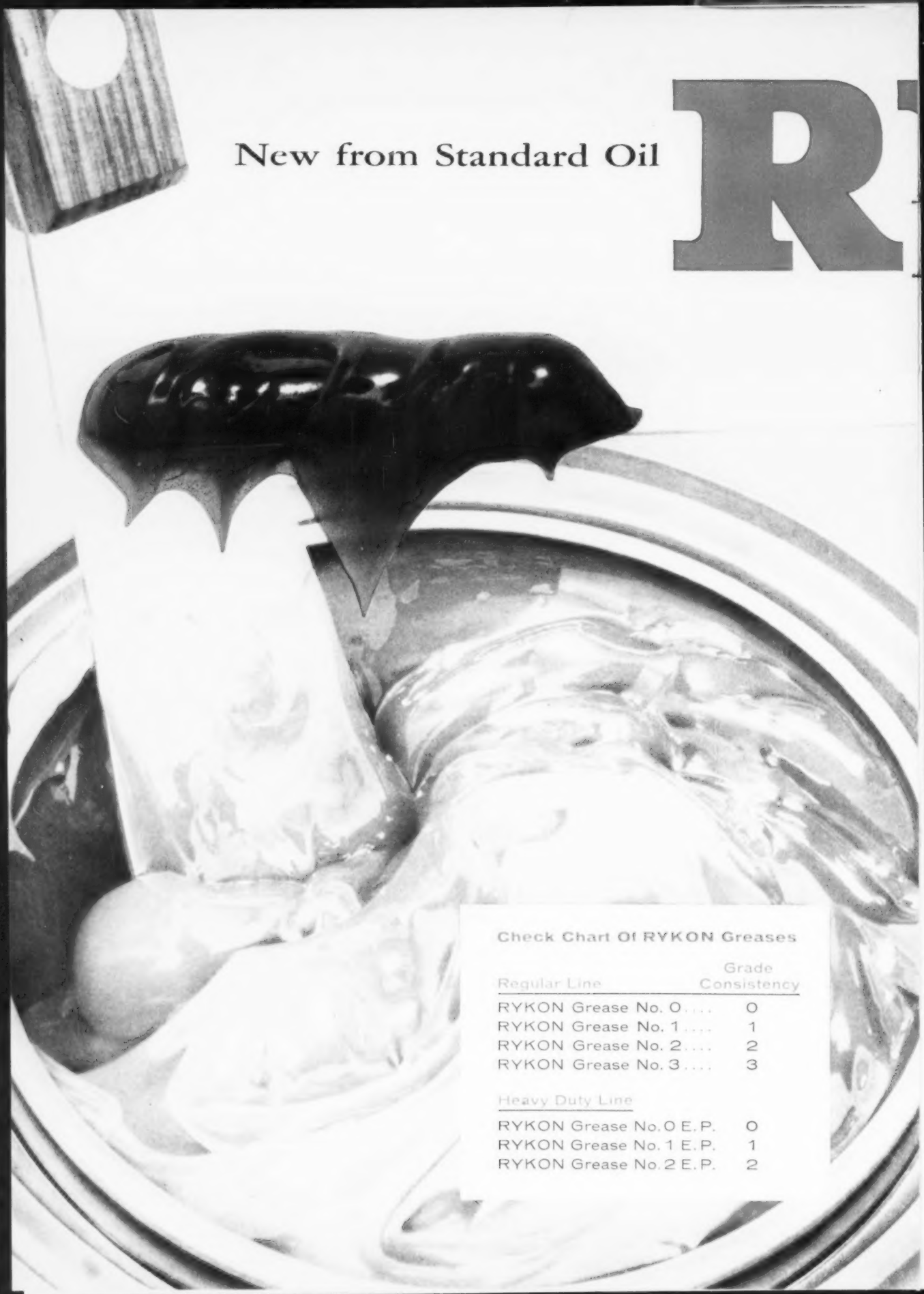
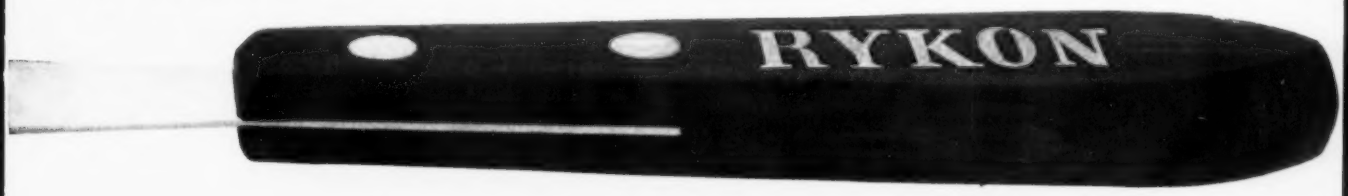


Check Chart Of RYKON Greases

Regular Line	Grade Consistency
RYKON Grease No. 0	0
RYKON Grease No. 1	1
RYKON Grease No. 2	2
RYKON Grease No. 3	3
Heavy Duty Line	
RYKON Grease No. 0 E.P.	0
RYKON Grease No. 1 E.P.	1
RYKON Grease No. 2 E.P.	2

YKON

GREASE



Standard scores major breakthrough in grease technology to bring you better lubrication...help you make important savings in grease use, application and inventorying.

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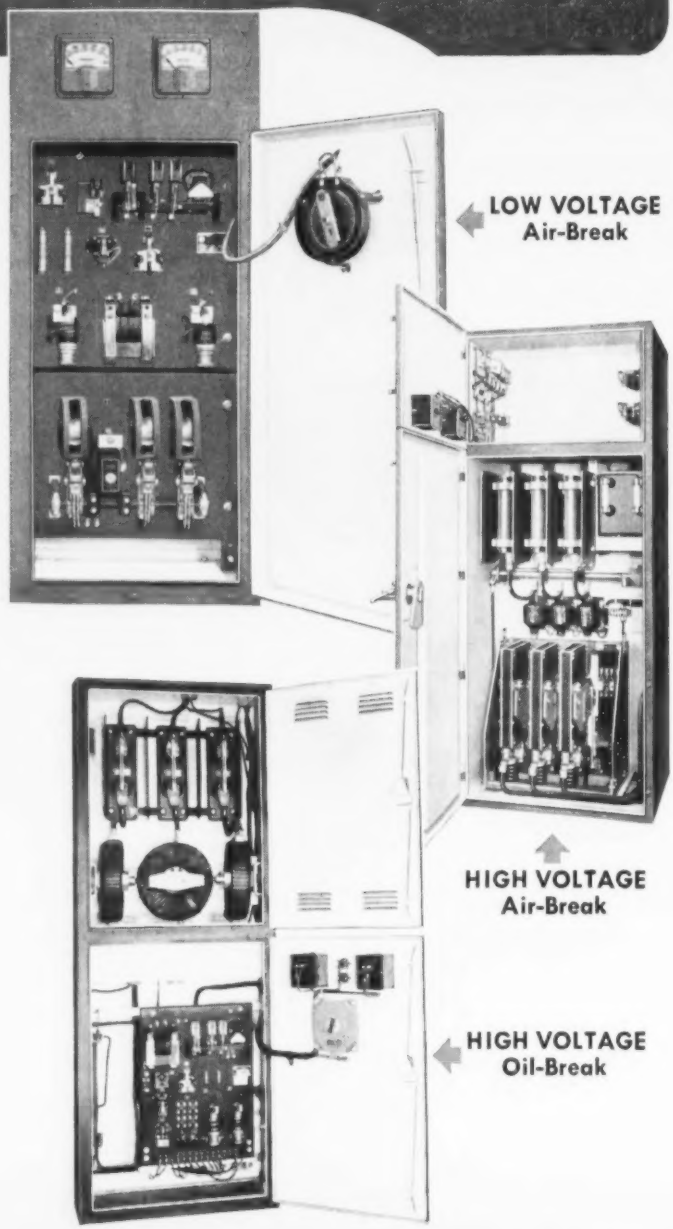

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OIL QUENCHING: Even careful control of bath temperature and other factors is not always enough to avoid cracking. Above, a massive part is quenched in oil bath at Bennett Heat Treating Co., Newark, N. J.

Electronic Signaller Reduces Quench-Cracking of Steels

If you heat treat steels you don't have to be told that quench-cracking is a serious problem. It's plagued heat treaters with heavy expense, bushels of scrapped parts.

The electronic signaller is an ingenious approach to the problem—one that can help many heat treaters.

By P. M. Unterweiser—
Metallurgical Editor

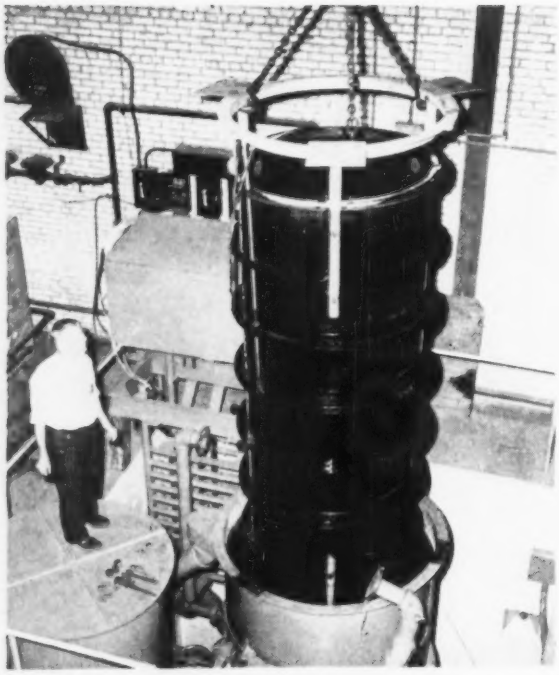
▪ Here's a development that might provide a practical answer to many a heat treater's problem.

It's a specially-designed, electronic signaller that should reduce the quench-cracking of steel and, in many instances, eliminate it entirely. Although the signaller never comes in contact with the part being quenched, it sends out an electrical signal when the part has hardened to a predetermined degree.

At this point, the part can be immediately withdrawn from the quench. Temperature of the part can then be allowed to equalize. The relatively slow cooling that follows avoids the build-up of severe internal stresses, thus reducing the possibility of quench cracks.

Magnetic Measure — Conducted at the Watertown Arsenal Laboratory by L. D. Jaffe, D. C. Buffum, and I. L. Preble, the test program which developed the signaller was sponsored by the U. S. Army Ordnance Corps.

How does the instrument work? Essentially, it responds to changes in magnetic permeability. This type of change occurs when austenite transforms to martensite. To de-

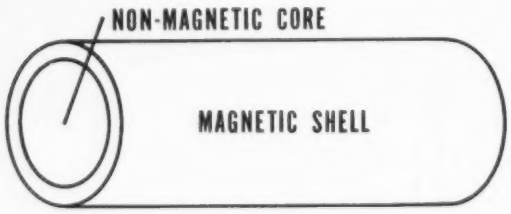


SENSING COIL: This large coil was designed for use with the pilot plant model signaller. Below the coil is the quench tank in which it is contained.

Table I

Test Specimens for Laboratory Quench Signaller

Specimen	Diameter	Length	Core Material	Shell Thickness
A	2.00 in.	8.00 in.	18–8 Stainless	0.10 in.
B	2.00 in.	8.00 in.	18–8 Stainless	0.20 in.
C	0.40 in.	2.25 in.	18–8 Stainless	0.020 in.
D	0.40 in.	2.25 in.	18–8 Stainless	0.040 in.



tect such changes, an electronic coil is immersed in the quench tank.

To date, two model signallers have been built. One unit, intended for laboratory or tool room use, operates at a frequency of 60 cycles per second. It can handle parts up to 2 in. diam. and 8 in. long in a 50-gallon quench tank.

Not A Toy—A second unit is much larger and operates at a frequency of 3/4 cycles per second. It can be used for parts up to 10 ft long in an 1800-gallon quench tank. In the opinion of the developers, both units can "detect hardening at an adequate depth within the part and are sufficiently simple to operate." Results provided are reproducible.

Quench-cracking of steel may be the result of various factors, including plain negligence. Sharp nicks, seams, or tool marks, for example, can cause a part to crack open during quenching. But, aside from negligence, most quench-cracking results from "normal" quenching intended to obtain a martensitic structure.

Two Extremes — The problem of proper quenching is something of a dilemma. It must be reasonably drastic in order to avoid a "slack" quench. "Slack" quenching gives rise to the formation of bainite, pearlite, or procutectoid constituents. It fails to provide the desired martensitic structure.

On the other hand, rapid formation of martensite results in a volume expansion which promotes severe internal stress. Under the circumstances, there would appear to be no such thing as an "ideal" quenching medium. The reason, according to the Watertown Arsenal report: "No quenching medium is known which will cool steel very rapidly at high temperatures and very slowly at low temperatures."

Quenching Time — Water—with or without a salt addition—provides the most rapid cooling at high temperatures. As a quenchant, this is its principal advantage. The problem is to remove the part from this drastic quenching medium in the optimum time to avoid cracking and permit slower cooling in the martensite range.

But what is the "optimum" time? And how can fixed-time quenching be adapted to fit average production conditions?

It is obviously difficult to determine an optimum quenching time on a production basis because the M_s temperature is likely to vary from one lot of steel to the next. To check the M_s point for each lot is both expensive and time-consuming, in addition to other disadvantages.

Tough Problems—For example: even when the M_s temperature is known, further work is required to determine the time necessary to reach this temperature. Add to this the fact that quenching time to reach a fixed temperature is not constant. It changes because of fluctuations in the temperature of the quenchant, agitation, impurities, and other variables.

For these reasons, fixed-time controls may be considered impractical. Therefore, according to the report, "it appeared desirable to control the quench not by a clock but by some indication, obtained directly from the part during the quench, that martensite is starting to form." Because water is the most effective coolant at high temperatures, this quenching medium was used in all tests.

No Contact Made—The key to the electronic signaller program stems from the fact that martensite is ferromagnetic and austenite is not. The program's main objective was to develop a device that could measure such change under normal quenching conditions.

Fortunately, changes in ferromagnetism can be detected at a distance. So that there is no need to either make contact with the part or interfere with quenching action.

To control the quenching of small laboratory samples, a signaller was designed and built by an outside supplier. This model (115A) has an operating frequence of 60 cycles per second. It does not use a bridge circuit. Instead, a driven coil is coupled inductively to a pair of pick-up coils. The pick-up coils are linked in series and are located near the top and bottom of the quench tank.

When a piece of steel enters the field at the top of the tank, cooling promotes martensite formation. Since the martensite is ferromagnetic, it instantaneously creates an unbalance voltage. This voltage is amplified and actuates the remainder of the circuit.

Balance Needed—A small cathode-ray oscilloscope, incorporated in the instrument, is used to obtain initial balance. An extra coil permits initial balancing of eddy-currents.

The quench tank is provided with running water, flowing at a rate of 12½ gpm. Only the top half of the tank can be used for quenching. The presence of a steel part in the bottom half causes eddy-current unbalance in the wrong direction.

To control the quenching of fairly large parts, a second instrument (Model 115B) was designed for operation with an 1850-gal quench tank. This tank has a 5-ft diam. and is 12½ ft deep.

Check Samples—The production-size signaller operates at very low frequency (¾ cycles per second), thus reducing magnetic "skin effect" and detecting martensite at a greater depth below the surface. Low frequency current is obtained by running direct current through a motor-driven commutator and associated resistance network. Output is approximately sinusoidal.

To check the laboratory model signaller, two pairs of test specimens were used. Dimensions of these cylindrical specimens are shown in Table 1. Each specimen consists of a non-magnetic core of 18-8 stainless press-fitted into a shell of untempered, martensitic steel.

Highly Sensitive—The specimens were made up of three concentric cylinders rather than two, so that the joints for all specimens would be similarly located. According to the laboratory report, this precaution was intended "to equalize any effects due to joints." The dimensions chosen represent the largest and smallest parts likely to be quenched with the laboratory setup.

These specimens were used solely as gages to check the sensitivity and stability of the controller. The instrument was found to be highly reliable in both respects. However, there was some indication that its response might be affected to some extent by water temperature. Other tests proved that the presence of non-magnetic material had no effect on instrument settings.

Good Reproducibility—Another series of tests were run to provide a preliminary evaluation of the pilot plant model signaller (115B). Again, a special series of tests were designed primarily to determine the instrument's sensitivity.

In general, the signaller was found to be sufficiently sensitive under different conditions of water flow, water temperature, and location of the work (vertically and horizontally) in relation to the detecting coil in the quench tank. Reproducibility of operation was checked under conditions involving known variables and found to be generally satisfactory.

Electronics First — It should be emphasized that all of the tests applied to both signallers were preliminary. Their purpose was to check out the broader operating characteristics of both instruments. None of the tests dealt with the actual quenching of steel parts.

To some extent, this is a natural limitation prescribed by the nature of the test program and its immediate objectives. These objectives concentrated upon the development of a control instrument. Logical sequence indicates that, in this case, electronic development must precede metallurgical testing.

In a discussion of the overall program, the Watertown report concludes that "the stability of the . . . quench-signallers has been established with respect to time, water temperature, and position of the quenched part. The adequacy of their sensitivity and reproducibility has also been established. The logical next step would appear to be an evaluation of the usefulness of a signaller in reducing quench cracking.

Future Plans—"It is planned to quench a large number of small bars from one heat of steel and to determine the percentage cracked with and without use of the laboratory model quench-signaller. It is thought, however, that a more satisfactory test would be to use a signaller in a heat treat shop for control of routine heat treatment of a large number of parts."

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept. The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Building-Block Line Handles

By R. H. Eshelman—Engineering Editor

Automatic machining lines can be flexible and still attain high output.

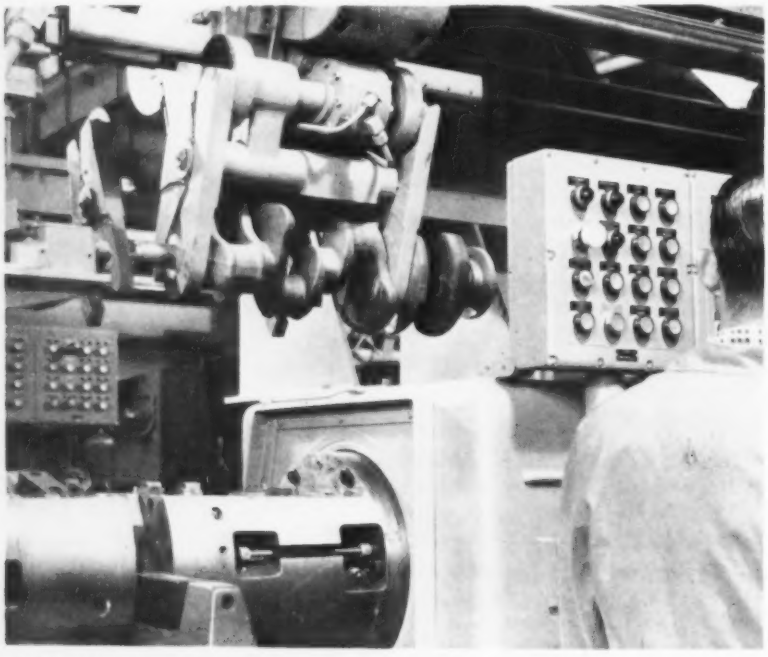
This one, a quick-change modular line designed for crankshafts, adapts to a variety of diameters and sizes.

It uses carbide cutters, which quadruple machining speeds and cut tool costs in half.

▪ Production machining a forged crankshaft is one of the toughest nuts the metalworking industry has to crack. This type of workpiece has a hard outer case; it's easily deflected when held between centers; it's difficult to hold rigidly and secure an accurate relationship of the various machined surfaces. Besides, up to 14 lb of material must be peeled off, so horsepower needs are high.

After eight years of experimental and development work, a machine tool specialist, Wickes Corp., Saginaw, Mich., thinks it has come up with the answer. This is a modification of previous methods of workholding, which permits using carbide cutting tools with higher surface speeds. Contrary to conventional practice, only one crankpin is cut in each machine. This simplifies automation, tool setup and changing, also allows application of greater horsepower in the turning operation.

It's now possible to turn cranks of different specs on one line with a few rapid changes in setup. Further, a wide variety of similar turning jobs on cylindrical surfaces is possible with the equipment. Conceivably it can be integrated into an automatic line with other standard machines.



LOADING: Steel fingers automatically transfer forged crank from conveyor to barrel-type chucks. Workpiece is driven from each end.

Four Times As Fast—In the first installation at Pontiac Motor Div., G.M., production is being doubled in slightly less floor area than needed previously. This is largely a result of higher cutting speeds. Use of carbide cutting tools allows 250 fpm—a spectacular jump from the 60 fpm common on this operation.

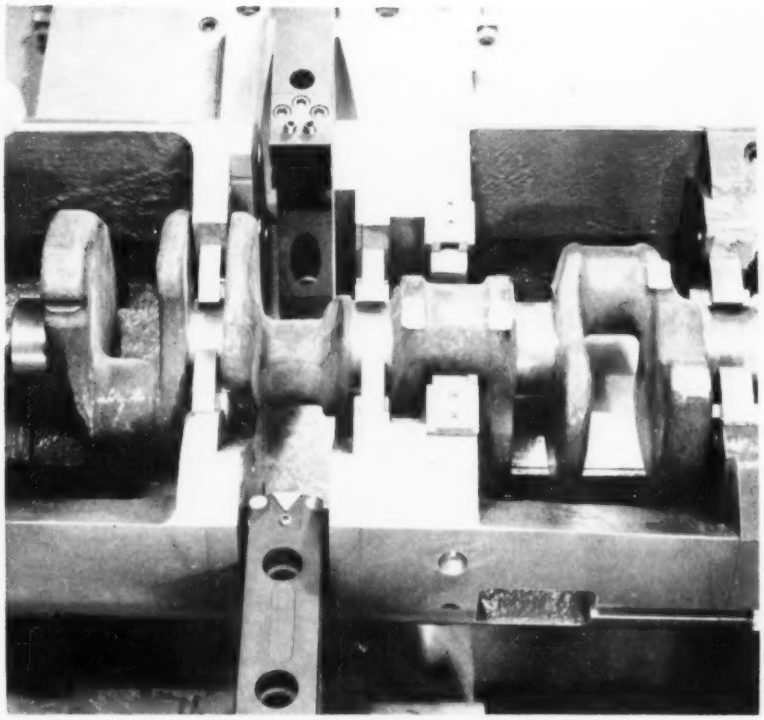
Educated estimates figure tool costs will drop about half or more. Although first cost of carbide cutting inserts is higher than the high speed steel form tools, runs are longer between grinds. The HSS cutting tools turned only about 40 crankshafts between resharpenings. Monthly costs for special steel form tools on this job run to $20,000 in plants turning out 150 crankshafts an hour. Tool changing times range from 45 minutes to 1½ hours per machine, with 16 to 24 separate tool bits involved.

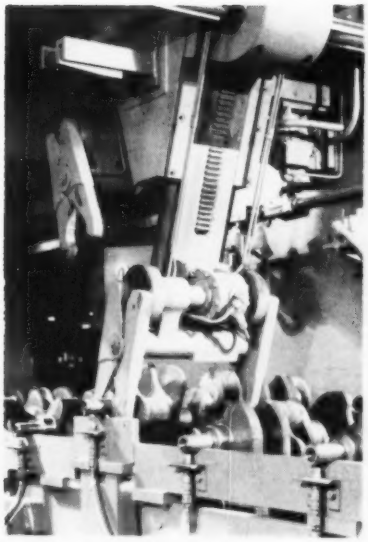
With this new facility, tool changes take only 5 minutes per lathe. Standard insert bits help speed the changeover, along with greater accessibility to the work area.

Coupled But Separate—Simplification of the entire setup is made possible by using an in-line approach. Automation engineers merely took a series of double-end drive lathes and tied them together with a flexible transfer and feed arrangement. As a crankshaft works its way down the line each lathe progressively machines one of the four pin diameters in order.

With this setup production proceeds in all other stations while one station is down for tool changes. Workpieces advance automatically to close any gaps on the transfer conveyor. In this way production isn't interrupted by tool changing or minor adjustments, which are made on successive stations. When

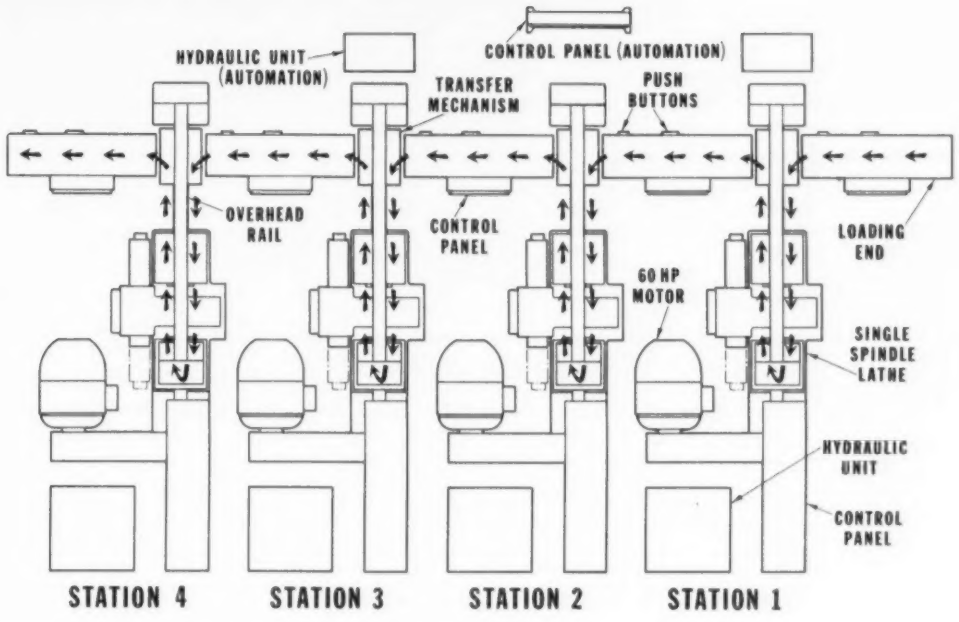
Various Shaft Sizes





NO GAPS: Transfer conveyor moves cranks up to the next loading station, like balls racked in bowling alleys. This way no machine idles while the others work.

BIRD'S-EYE VIEW: Standard carbide inserts cut from both front and back. Chuck jaws hold crank rigidly in three different places, align with its centerline.



SYSTEMATIC LAYOUT: Movement of workpieces through the automatic line is shown by arrows. Each lathe forms one bearing or crankpin surface, can be operated independently to meet special emergencies.

Capital investment is a third less, and manpower and tool costs are halved; but biggest savings are in retooling.

filled, the conveyor holds 32 crankshafts, eight between each station.

The lathe at each station can be operated manually, independent of the rest of the line. This gives flexibility for meeting production emergencies. Machine feeds are controlled by opposed cross slides for straight plunge cuts or in-feed. Hydraulic cylinders activate the slides through a cam bar.

To absorb thrust of the cutting tool and provide more rigidity, the cam bar actuates the slides through shoes, rather than a roller. Like the cross slides, the barrel-type chucks are also operated hydraulically.

Front and Rear Tools—Although the workpiece is held on different diameters in successive stations, actual cutting operations are the same. The cutting tools approach the work from both front and rear. Two round carbide inserts in the front toolholder perform cheeking of the crank balances. Triangular shaped tools do the plunge cut. One is in the front toolholder, two in the back. Negative rake on the round bits is secured by tipping them slightly. The triangular tools cut with a zero or slightly positive rake.

Plunge forming the diameters, a 2-inch wide cut, uses a 0.010-ipr feed. Cheeking, an interrupted cut, is done at feeds of 0.040 to 0.060 ipr. Depths of cuts average ¼ in.

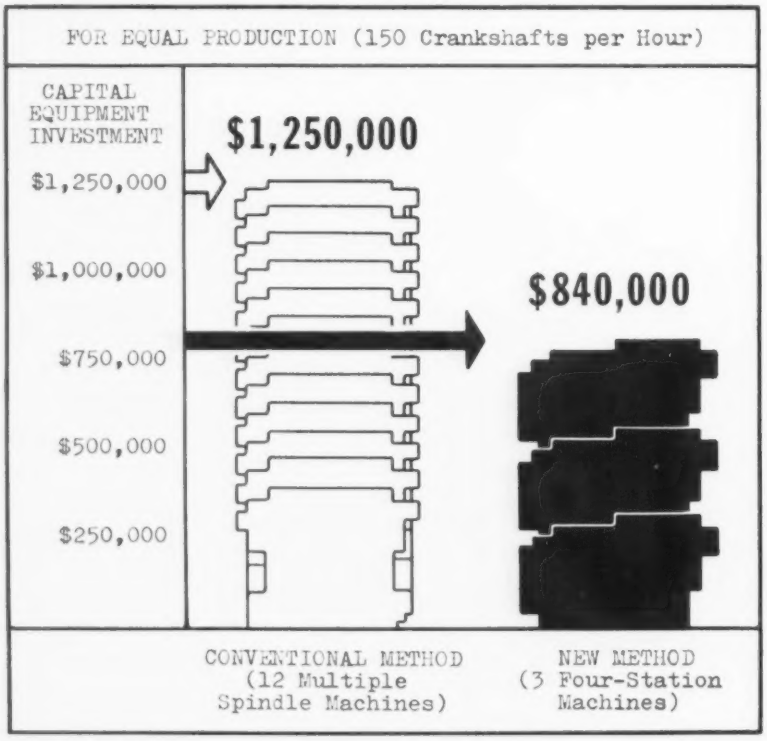
While developed to handle the tougher forging, the line can also machine shell-cast cranks. In fact, according to detailed estimates of Wickes engineers, their new automation setup should afford dramatic capital equipment savings for machining of all types of crankshafts.

Simpler Arrangement — One of the major savings is elimination of milling setups for eight locating flats used in present installations. The new chucking arrangement has no need for these and assures holding tolerances as close or closer.

The engineers visualize another major savings in retooling costs and time whenever a change occurs in crankshaft design specifications. At present two sets of double spindle lathes are commonly used: one for roughing and one for finishing. Being single-purpose equipment, these take about a month to retool at costs of $30,000 or more per machine.

A change in crankshaft throw now involves merely placing new jaw inserts in the chucks. Cutting tools are altered accordingly. In addition, the new line outproduces old facilities by better than 30 crankshafts per hour. Capital investment is about two-thirds that formerly needed.

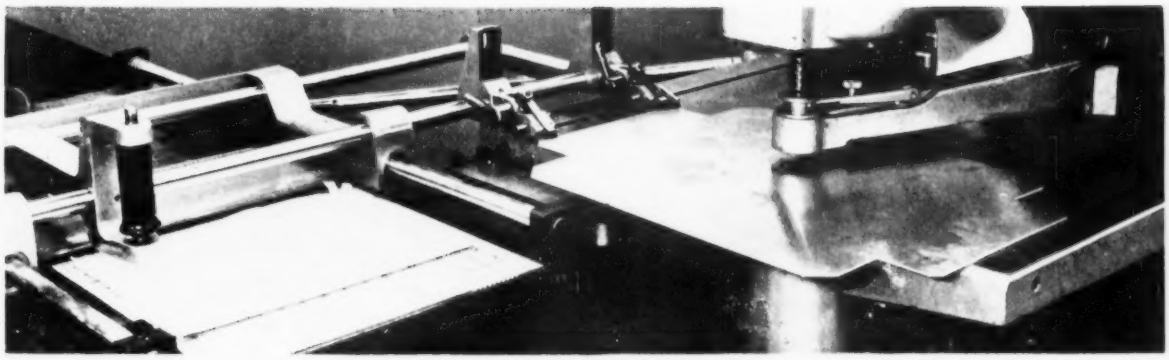
Wickes executives say a new concept was overdue in this field. Carbides couldn't be applied otherwise. For double spindle crankpin lathes to use carbides in an equivalent manner would require application of 480 hp. Each machine in the new arrangement uses 60 hp, making 240 hp total for the entire line.



COMPARISON OF OPERATING COSTS - Estimated

	CONVENTIONAL	NEW
RETOOLING COSTS	$420,000	$3000
CUTTING TOOL COSTS	$20,000 PER MO.	$10,000 PER MO.
MANPOWER REQUIREMENTS	6	3
FLOOR SPACE	4800 SQ. FT.	2700 SQ. FT.

BIG SAVINGS: Comparison of capital investment and operating costs for making 150 crankshafts per hour by old way and new.



NO TEMPLATE: Tracer control operating from blueprint on grid layout table locates sheet metal.

Tracer Device Locates Punched Holes From Blueprints

One man now does the work of eight with a simple grid layout table and tracer control device attached to the hole-punching machine.

Since it works directly from full-size blueprints, there's no need to make separate templates for each test piece.

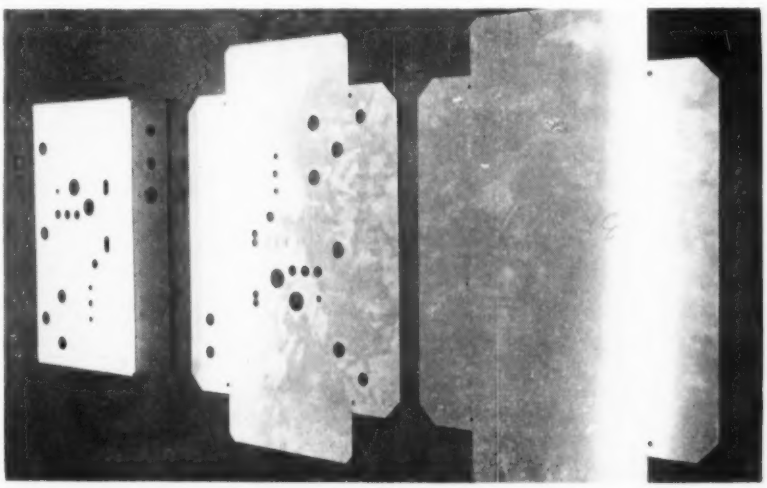
▪ Seven man years per year are saved with a new grid layout table and tracer control designed by The Martin Co., Baltimore, for use on a Wales semi-automatic hole-punching machine. Where eight men were required to drill and finish test-tool chassis holes, one man can now do more work than was formerly done by the entire crew.

Originally, the hole-puncher worked from a template clamped on the press bed. The punch was manually set on the proper hole location, punched and then moved to the next setting. Since two test-tool chassis with like patterns are seldom needed, a new template had to be laid out for each chassis.

With the Martin grid layout table and tracer control unit, the punch can be worked directly from a blueprint rather than from a template.

First, an actual-size blueprint is taped on the 30 x 40 in. grid layout table. The blueprint and chassis sheet are correspondingly positioned by the centering hole. The tracer is then set on the print in the desired hole location, the control lever depressed, and the hole is automatically punched in the sheet metal clamped to a control arm on the press bed. The tracer control is then moved to the next location and the process repeated. A special die is used to notch the corners of the chassis sheet.

Since the blueprint is drawn to the exact size of the chassis sheet, the pantograph arm works on a one-to-one ratio, although the ratio can be varied if the work calls for it. Generally, it's proven more efficient and accurate to work from an actual-size blueprint.



CHASSIS EVOLUTION: New Martin device makes it possible to inexpensively fabricate test chassis for variety of electronic components.

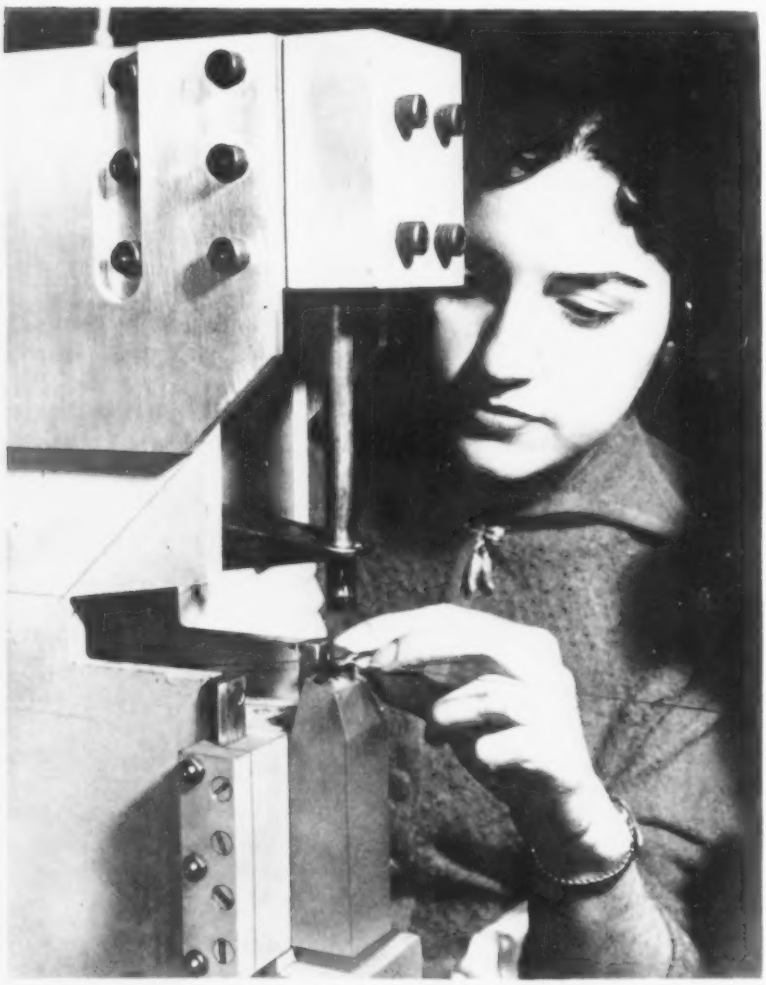
New Ultrasonic Welder Takes on Production Job

Ultrasonic welding achieves a strong metallurgical bond by combining low pressures with vibratory energy.

This new unit is portable and uses little current. In seconds, it can weld thicknesses of aluminum up to 0.012 in.

▪ Ultrasonic welding provides a method of making sound joints in metals and geometries which are difficult or impossible to achieve with other methods. That's one reason it is gaining more and more serious consideration as a production technique.

By definition, ultrasonic welding bonds similar or dissimilar metals by the introduction of vibratory energy. It results in solid state bonds with deformations that are only a fraction of those of pressure welding. Also, it usually does not require added heat.



JOINING FOILS: Aluminum and copper foils are welded ultrasonically at the General Engineering Labs of American Machine and Foundry Co. Aluminum foil replaces round copper wire in "wafer" transformers.

It's Sputterless—Since there is no current passing through the joint, there is no arcing, spitting, or sputtering. With this advantage, ultrasonic welding has proved practical for joining thin electrical conductors of foil dimensions to members of similar thickness as well as to wire of the same or different composition.

In many cases, insulated sheet or foil can be welded without prestripping. And ultrasonic welding is also used to join foil or fine wire of copper or aluminum to wire, sheet, tube, or plate material.

For Sound Bonds—Much of the current interest in ultrasonic welding stems from efforts to substitute aluminum foil conductors for conventional copper windings in coils for transformers and other electrical devices.

One factor that has restricted acceptance of foil for coils is the problem of making sound connection between the aluminum and copper leads. Aluminum is difficut to solder. Resistance welding will often burn through the foil. Of the various methods of joining tested, ultrasonic welding is one of the most promising.

No Problem—With it, aluminum foil as thin as 0.00015 in. can be readily welded to wire, foil, or other members. Relative thickness of the parts being joined is no problem.

There are no deleterious effects from heat in either of the members. Nor is there a problem of large deformation such as may occur with pressure welding methods.

CLOSE-UP: This photomicrograph shows an ultrasonic weld achieved with copper and aluminum (900x).

Equipment Ready—Tests on tensile-shear specimens show that the strength of ultrasonic welds in aluminum compare favorably with that of other methods, including high-pressure welding. Welding of aluminum foil and sheet to itself or copper foil and sheet is now practical. Equipment that can handle a wide range of gauges is available for industrial use.

One of the drawbacks of joining thin wires by resistance welding is that it may result in excessive grain growth. If so, the bond will be brittle and subject to early fatigue failure.

Ultrasonic welds do not cause grain growth. For this reason, their fatigue resistance should compare favorably with that of the base metals.

Compare Current—Another desirable feature of ultrasonic welding is its low power requirements. For example, to join two pieces of 1/16 in. aluminum sheet by resistance welding requires about 75 kva. An ultrasonic machine needs only about 3½ to 4 kva to do the same job.

The ultrasonic unit can be plugged into almost any standard 220-v power line. It is semi-portable. What's more, the welding head can be anywhere from 50 to 100 ft from the electronic apparatus and still work efficiently.

Ultrasonic welds are made by clamping the pieces to be joined with a force of from 10 to 400 lb. Simultaneously, vibratory energy is introduced at the point of pressure. This high frequency mechanical energy passes into the metal parts and breaks up the interface between them. In a matter of seconds, a solid state metallurgical bond is produced. External deformations are usually less than 5 pct.

Energy Changed—The ultrasonic vibration is generated by converting electrical energy into mechanical energy by means of a transducer. This usually consists of a stack of nickel laminations wound with insulated wire.

When high frequency electric current is passed through the windings, the magnetic field created induces a change in the length of the laminations. This phenomenon is known as the magnetostrictive effect.

Nickel is generally used for the transducers because its magnetostrictive effect (or change in length) is among the largest possible of any commercially available material. It provides rugged construction and resists both elevated temperatures and corrosion.

Readily Moved—Alternating current is supplied to the transducer by an electric generator at the design frequency of the transducer and coupling system. Depending upon the characteristics of the system, this will generally range from 4 to 60 kc.

A light weight and portable ultrasonic welding unit is now available for welding thin materials on a production basis. It will join like or dissimilar metals of many types. It can handle thickness up to 0.012 in. of aluminum and up to 0.005 in. of copper.

Without the generator, the assembly weighs about 65 lb. It can be used as a bench-type unit or with a stand assembly. The 300 r-f watt ultrasonic generator which powers the nickel transducer is mounted on casters. The entire unit can be moved and relocated with a minimum of time and effort.

Theoretically, there is no limit in the size of ultrasonic welding machines, particularly when the transducer is made of nickel. Machines of 3-4 kw are in everyday laboratory use, and heavier equipment is being developed.

Warehouse Helps Customers With Small Rolling Mill

Most warehouses provide a string of services for their customers. Here's one that added something new: It will reroll a couple of coils from stock to any gage a customer wants.

Behind the service is a new ac-type of mill drive that cuts cost and simplifies rolling.

▪ Here's a new customer-service idea for metal warehousers: Rerolling coil stock to specified thicknesses for firms who need quick delivery on small quantities. It's a "plus" that ties in neatly with slitting and shearing operations to give customers a three-way package: Material that's the right length, width and thickness.

Isn't a rolling mill, even a small one, an expensive and complicated unit for a warehouse to install and operate? Not necessarily, according to officials of Rafferty-Brown Steel Co., Inc., Springfield, Mass.

For the past two years this warehouse firm has been rerolling stock coils for its customers, using a 2½ x 8 x 10-in. Waterbury-Farrel mill.

New AC Drive—Key to the simplicity and economy of their small mill, R-B's management feels, is a new alternating current type of drive for both the mill and the windup reel. Clark Controller Co., Cleveland, developer of the new drive unit, claims two basic advantages for its ac system:

It eliminates the need for an adjustable-voltage dc drive to maintain constant tension while changing line speed. Thus the expense of a motor-generator set to provide this type of power can be avoided.

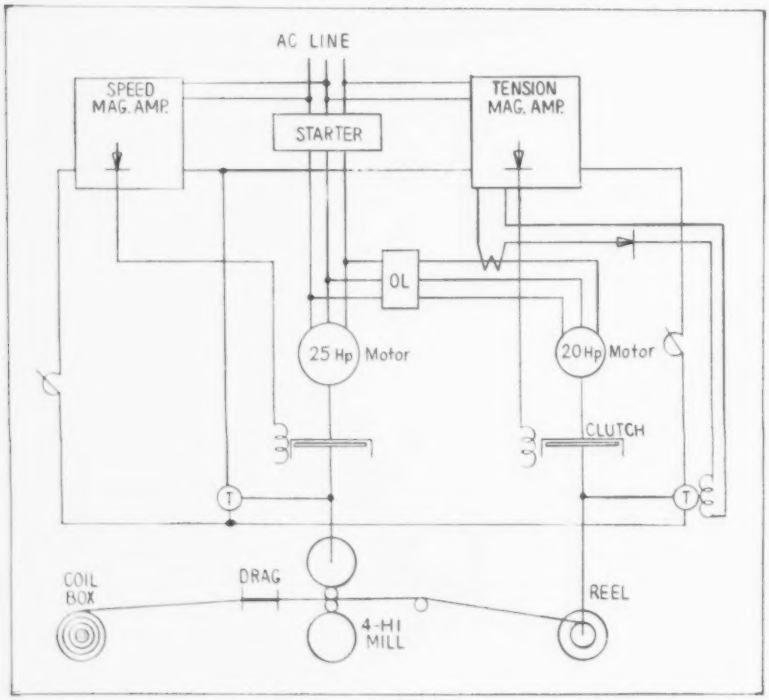
2. It uses a "feedback" principle to regulate strip tension automatically, regardless of either the rolling speed or the changing diameter of the windup reel. There is no need for a skilled operator to manipulate separate controls for coordinating these variable factors.

Uses Slip Couplings—Basically the system uses standard ac squirrel cage induction motors. These operate through electric-slip couplings which are connected, either directly or through reduction gears, to the mill and windup reel drive shafts.

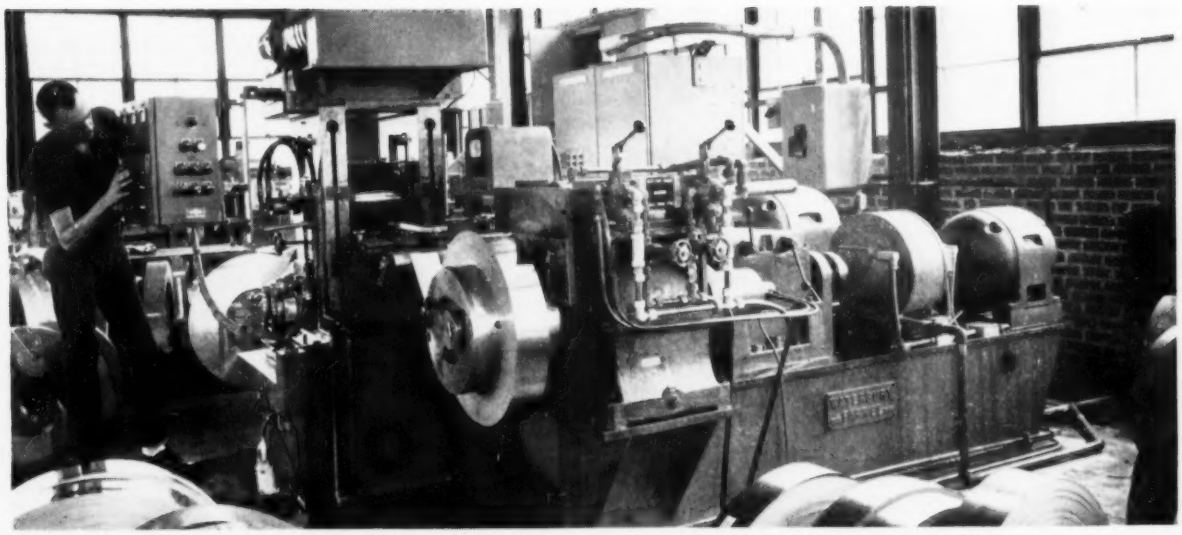
Complete control of such rolling functions as jogging, line speed, starting, stopping, emergency stopping, stall tension, running tension, coil-diameter compensation and inertia compensation are accomplished by changes in excitation of the electric-slip clutches.

Slip across couplings, also line speed and coil diameter, are measured and compared in a wound field tachometer generator whose output is proportional to the product of strip tension and speed. Proper coils may be wound by using constant-hp drives. The computer (Strip Tension x Speed) directs the regulating system to produce, at the coiling mandrel, constant hp at a given line speed.

Push Button Control—All of this coordinating requires no attention from the mill operator. He can, however, change line speed as required and the control will automatically maintain tension at the correct value. All of the control buttons are on a panel box mounted within easy reach of the operator.



WHAT'S INVOLVED: Essential components of the ac-type drive for a non-reversing rolling mill are linked as the diagram shows.



WHILE ROLLING: As operator varies rolling speed at will, strip tension adjusts automatically.

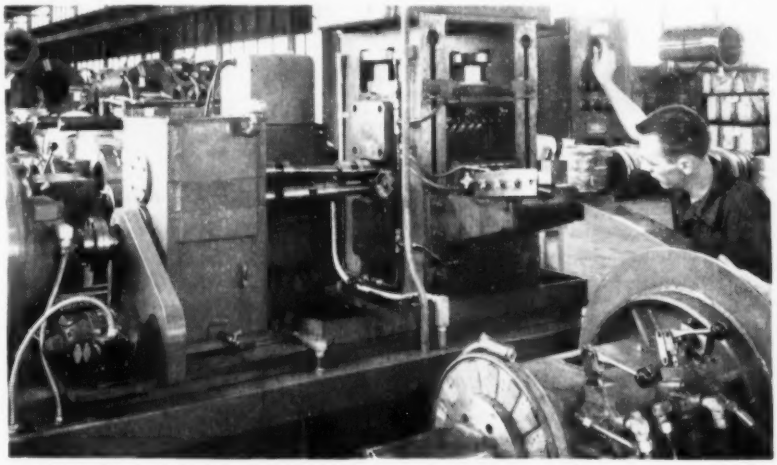
The new ac-type control unit comes fully wired and tested. Less than an hour's work is required to connect the mill and reel drives to the control cabinet. The mill is then ready to run.

Clark feels its new drive unit offers many desirable features to operators of ferrous and nonferrous metal processing equipment, although the firm admits it is not intended for heavy steel mill applications.

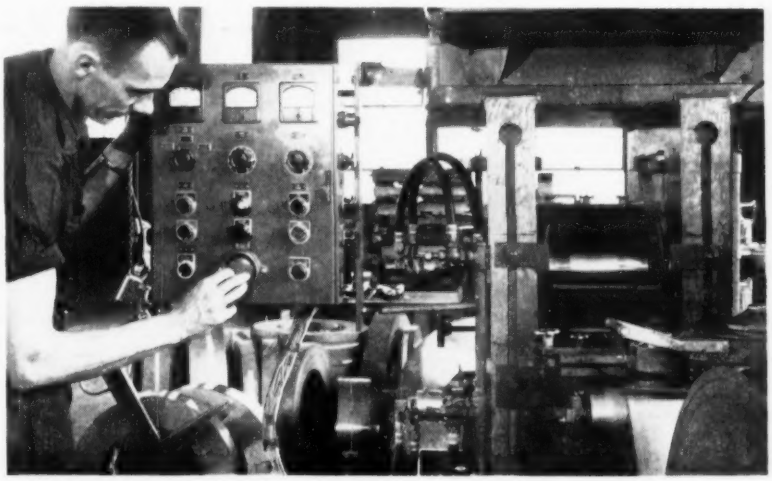
For Lighter Work—In general the drive is designed for applications involving lighter machinery in such work as warehousing, wire drawing, and rolling and forming of light metals.

Further advantages come in the fact that the ac drive can be maintained by usual shop personnel. Special skill is not required.

Because of the inherent simplicity of the ac system, the equipment involved requires very little floor space and no expensive foundations. Aside from the Rafferty-Brown installation, several other small ferrous and nonferrous rolling mills have been equipped with these new drives for constant tension winding. In the case of one firm, a system has been supplied for reversing the operation.



GOING IN: At the entry side of the mill, operator manipulates one side of three-faced control panel to adjust roll separation.



COMING OUT: Inching, stall tension, other adjustments necessary at the delivery side are controlled from third face of panel.

Choice of Stock Cuts Scrap Loss

By Herbert Chase—Consultant, Forest Hills, N. Y.

Just because a stamping line is automated doesn't mean that it can't be improved.

The type of stock used may be the first place to look for improvement.

One company benefits by switching to coil stock. Result: fewer steps, less scrap loss.

■ For some years, the Buick automatic Dynaflow transmission has included a stamped stator ring. It's a short tube collapsed to form an external bead.

Faced With Scrap Waste — To produce this ring, the Buick sheet metal plant used steel sheet stock 0.060 in. thick. A circle was blanked from the sheet and was drawn into a cup about 2 in. deep.

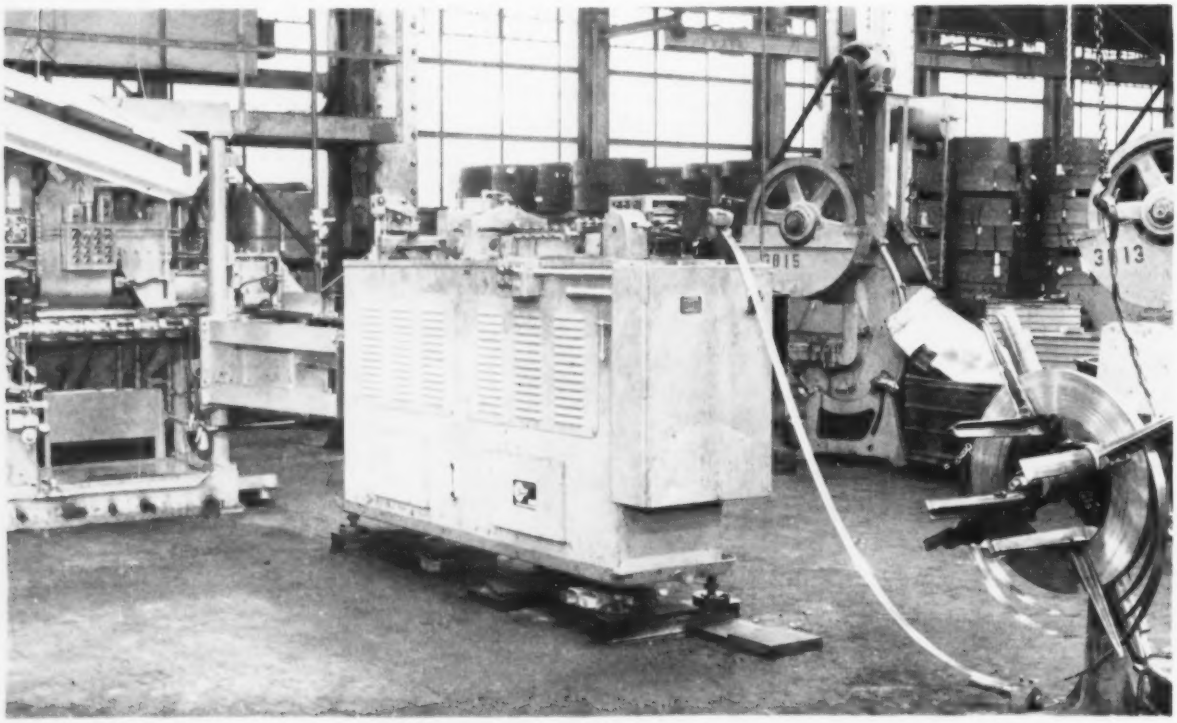
One trimmer cut off the bottom of the cup (used subsequently for another stamping). A second trimmer sliced a ring of metal from the top of the cup. Each operation results in considerable scrap.

The edges of the ring were coined and the external bead was formed in a press that reduced over all height. Finally, a special expanding die pierced a set of radial holes.

Less Waste With Strip — Although the line was well automated, it involved several presses and took considerable space, besides being costly in scrap. Study showed that by using coil stock 0.060 in. thick and 1.493 in. wide the setup could do the job with minimum waste and fewer operations.

In the new setup the coil stock feeding from a decoiler passes hydraulically through straightening rolls and is sheared into uniform lengths. The lengths feed automatically through rolls that produce rings with a small overlap where the ends meet. The rings pass onto an arbor.

Arbor Transfers Rings — Recessed bars, reciprocated by an air-operated plunger, index the rings forward with expanding spring operated latches. After moving through ten steps, each ring arrives under the welding wheel of a National welder.



COIL STOCK FITS JOB: Sesco unit (center) straightens and shears stock into uniform lengths. The lengths, formed into rings, pass to air-operated arbor (left) which feeds them to welder.

The ring, gripped as it hugs a solid portion of the arbor, is given its correct diameter and a 3/32-in. overlap on top of the arbor. The welding wheel makes the weld under a pressure sufficient to reduce total thickness from 0.120 to 0.080 in.

As this thickness is 0.020 in. greater than that of the remainder, the ring advances into the die of a Niagara press. By striking the weld a coining blow sufficient to reduce its thickness by 0.020 in., the press leaves the weld with the same thickness as the remainder of the ring.

Since the weld area is slightly wider than the ring, the extra width is sheared off in the same press.

Hydraulics Form Bead—A hydraulic press, instead of the former vertical mechanical press, forms the central bead around the diameter. Half of the die is supported in a sturdy holder that swings 180° about a heavy vertical column.

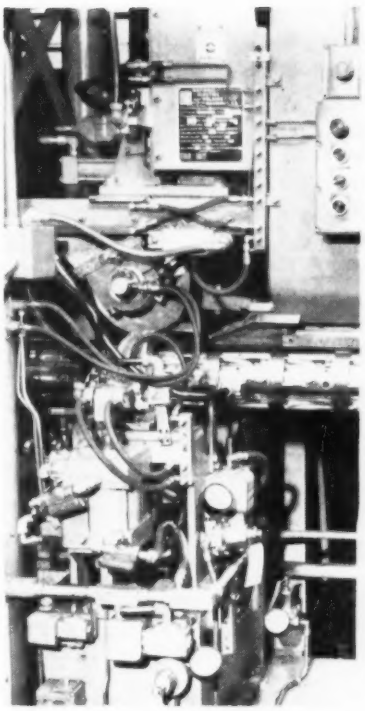
The die swings to receive the stamping ejected from the coining press. The die then turns to its locked position.

The other half of the die advances hydraulically. The ring, clamped between the two halves, receives pressure to cause the metal at center to bulge into an external recess.

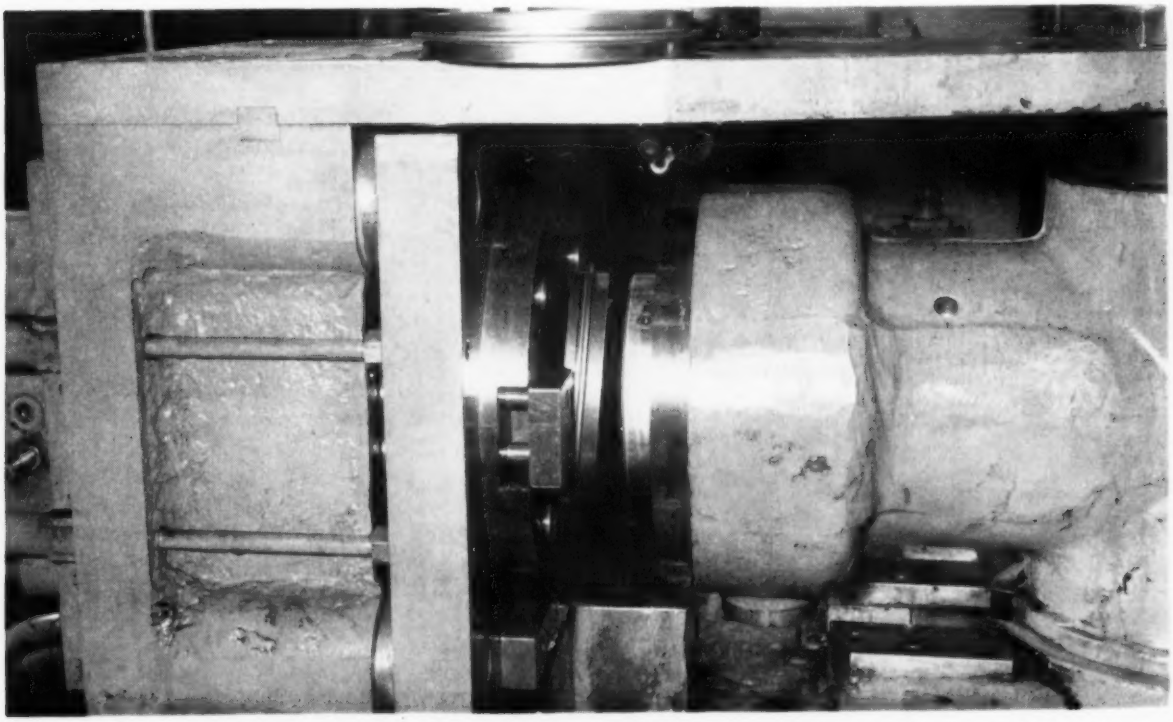
The die opens to eject the ring, now fully formed. The radial holes are pierced in the same die and press used before.

The new setup reduces total time, labor and space. The only scrap is the very small amount sheared off at each side of the welded joint. The latter has ample ductility to withstand the severe forming where the weld crosses the bead.

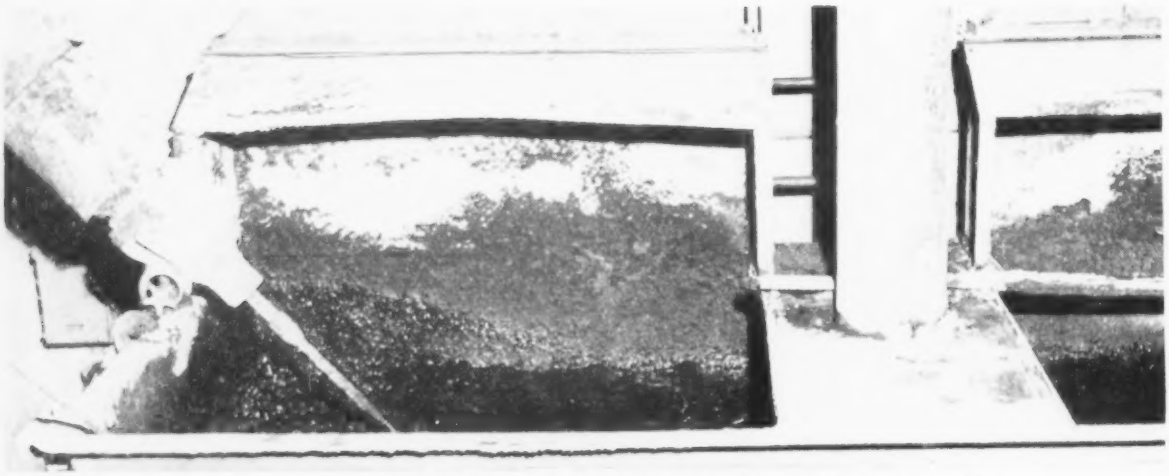
By using coil strip the Buick plant gets the same close tolerances in the stator ring as with sheet stock. The quality of the part is the same in either case, but it's the lack of waste and savings in labor that favors coil stock.



PRESSURE WELD HOLDS UP: Welding wheel reduces joint close to desired dimension. Weld withstands severe forming in bead area.



AUTOMATIC FORMING: Ejectors on left-hand half of die remove formed ring. Right-hand half of die will then swing to receive new blank. Welded joint has ample ductility to withstand severe forming.



IN THIS TANK: Waste products are mixed with water before the sodium hypochlorite is dumped in.

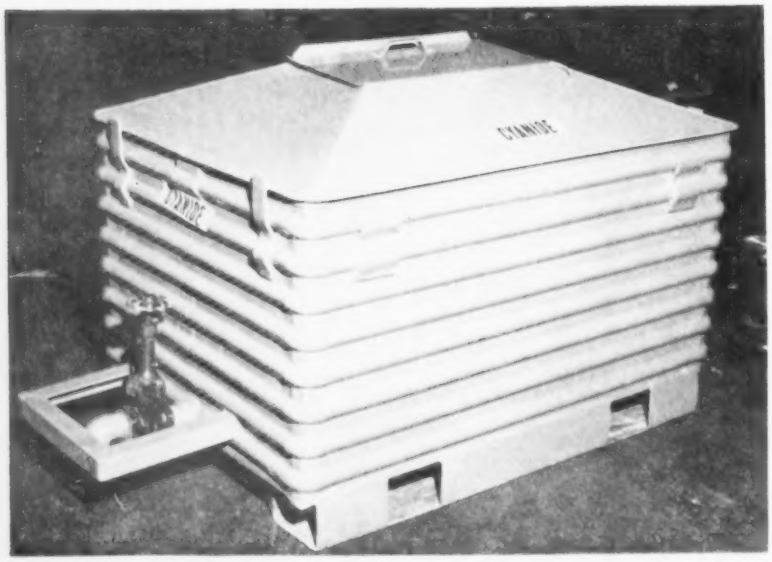
How To Dispose of Cyanide

By **B. H. Robbins**—Chemical Labs Supervisor, Oldsmobile Div., General Motors Corp., Lansing, Mich.

Electroplating operations inevitably produce certain waste liquids and solids. Consequently, they must be disposed of.

Where these waste products contain cyanide, you have to be sure they're rendered harmless.

▪ Disposal of cyanide wastes from copper and zinc plating operations is a practical and efficient business at Oldsmobile's Lansing, Mich., plants. It has to be. The city insists that all auto-plant effluent entering the municipal sewer system must not be impure beyond certain limits.



FOR LIQUID WASTE: Disposal department holds cyanide-bearing liquids in 220-gal closed containers until they can be neutralized properly.

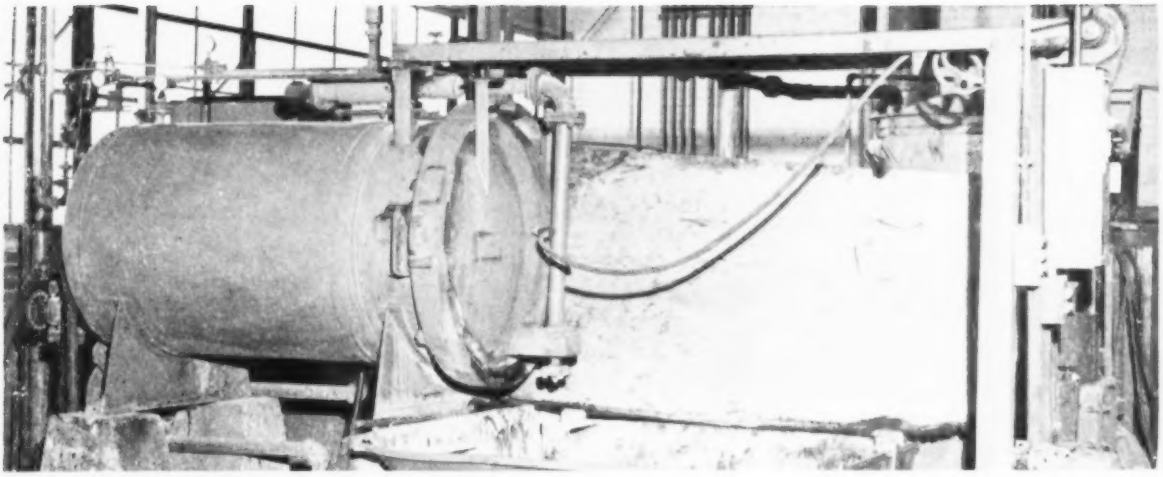
For cyanide in particular, the maximum allowable concentration is 10 parts per million.

Yet the automobile firm's copper plating tanks alone contain about 142,000 gal of cyanide solution, and barrel-type zinc plating machines hold another 18,000 gal. A considerable amount of solution loss and waste products is unavoidable, but no free cyanide can be allowed to escape.

Two Kinds of Waste — Cyanide wastes from these operations are both liquid and solid. Liquid wastes consist chiefly of (1) nonrecoverable rinse waters, (2) the output of an electrolysis tank where certain contaminated cyanide solutions undergo electrolytic destruction, and (3) overflow accumulations from the various plating tanks.

Solid wastes are composed of (1) spent filter cakes, (2) materials remaining after carbonate removal treatments (in copper solutions), and (3) stack scrapings from ventilating systems.

Solid cyanide wastes constitute the bulk of the disposal problem.



AGAIN AND AGAIN: Hypochlorite-treated solutions recirculate through this filter for one hour.

Plating Wastes

They result, for the most part, from treatments that remove the inevitable carbonates which form in air-agitated copper plating solutions. Because these carbonates are not conducive to top-quality plating, they must be eliminated periodically.

Precipitate Carbonates—Removal is accomplished by precipitating the carbonates, either with hydrated lime or with a stabilized calcium cyanide mixture. Standard practice involves treating 1000 gal of solution and passing it through a horizontal filter to screen out the precipitates.

The resulting filter cake will weigh from 800 to 1000 lb. It will also contain from 10 to 20 lb of cyanide as CN, which must be disposed of.

Oldsmobile's waste-disposal department is staffed and equipped to process from 3000 to 5000 lb of cyanide-bearing solids or 2000 to 4000 gal of cyanide-bearing liquids each day.

Treatment Routine — Cyanide-bearing solid wastes are treated as follows:

A 2200-gal treatment tank is half filled with water, and a quantity of solid waste weighing about 850 lb is transferred to this tank. The volume of the mixture is then increased to 1800 gal by adding more water.

This solution is agitated with a mechanical mixer for about 15 minutes, and a sample is then taken from the tank. While the sample is being analyzed to check cyanide content of the original batch, 50 gal of sodium hypochlorite is arbitrarily added to the tank and agitation is continued.

As soon as the cyanide analysis is complete, more sodium hypochlorite is added to the tank. (Total hypochlorite required is approximately 4 gal per lb of cyanide in the batch).

Check Chlorine — After another 20 minutes of agitation a second sample is taken and analyzed for "free chlorine." A "free chlorine" content of at least 200 parts per million is maintained.

For the next 60 minutes the mixture is recirculated through a horizontal filter. During this period, solids accumulate on the leaves of the filter to a depth of about two inches. At the end of the hour all solids have been filtered out and the process is stopped.

Air is then blown through the filter cake for 15 minutes, after which the filter is opened and an air-actuated shaker begins to break up the caked material. Dislodged solids drop down into a container and are hauled away to a dump for burial. (Tests shows that these buried solids cannot contaminate underground waters at any time.)

Drain Tank Weekly—The filter is again closed and about 300 gal of solution from the treatment tank is pumped through it into the sewer system. This makes room in the treatment tank for the next 850-lb batch of solids. The 2200-gal tank is drained completely only once each week.

When cyanide-bearing liquids are treated, an 850-lb load of solid waste is dumped into the treatment tank as usual. Then 1000 gal of waste liquid is first mixed with the solids before plain water is added to bring the tank up to its operating level.

After 15 minutes of mixing, this batch is tested for cyanide content and then treated with sodium hypochlorite as previously described.

Recover Rinses — To keep its plating systems tight, Oldsmobile recovers various rinse solutions and uses them as "makeup" for the plating tanks. Either spray nozzles or fog nozzles are used at recovery-

rinse stations to further minimize drag-out of plating solutions.

Also, any solutions that accumulate in the pits under the plating tanks are purified by a carbon treatment and subsequent filtration. When cleansed, these solutions are also used as part of the makeup for plating tanks.

However, the carbon-and-filtration treatment is used only on solutions that are relatively free from contamination. To keep these solutions clean as long as possible, pits under the plating tank lines are sectioned off to isolate acid-bearing from cyanide-bearing liquids.

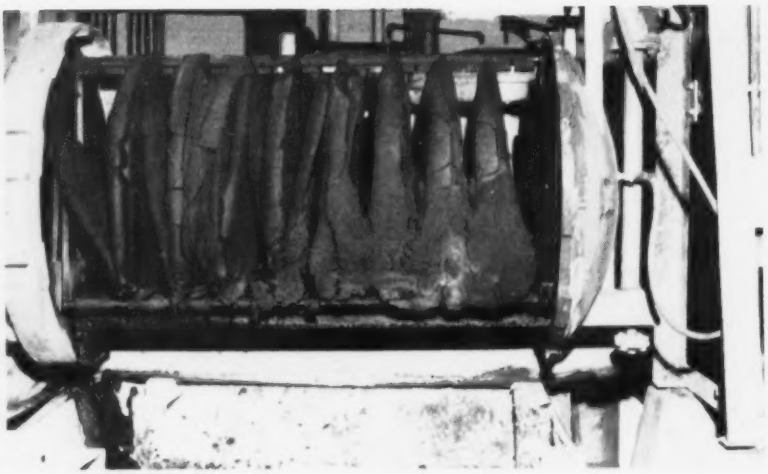
Seal Pits—Moreover, all pit sections that might contain cyanide-bearing solutions are especially sealed to keep the liquids from entering a sewer system.

For added conservation, auxiliary plating-line equipment such as mix tanks, slurry tanks, storage tanks, pumps, filters and heat exchangers are installed on decks adjacent to the plating tanks. These decks are enclosed in retaining dikes about two feet high. Thus any solution that is lost from an auxiliary unit drains into a pit where it can be recovered easily.

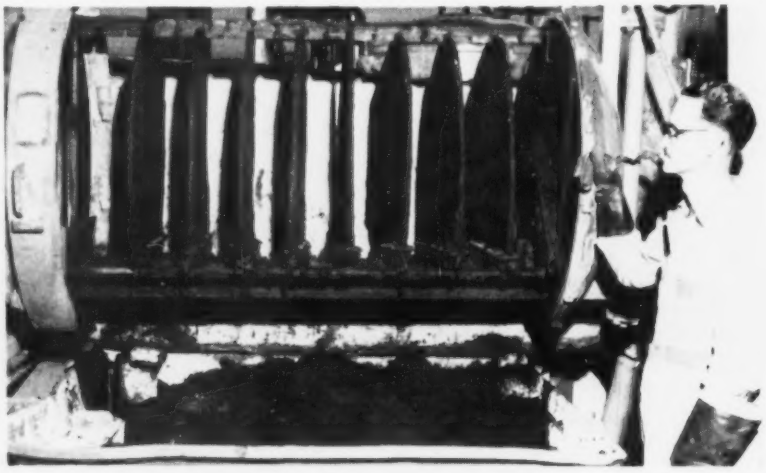
Watch Model Changes—As a further good-housekeeping measure, a study is made each time there is an automobile design change. This determines the most efficient manner to rack all plated parts in order to (1) achieve the best possible plating results; (2) keep cyanide solution drag-out to a minimum.

For a routine check on cyanide-waste disposal practice, samples are taken from the sewer twice daily and analyzed for cyanide and metallic content.

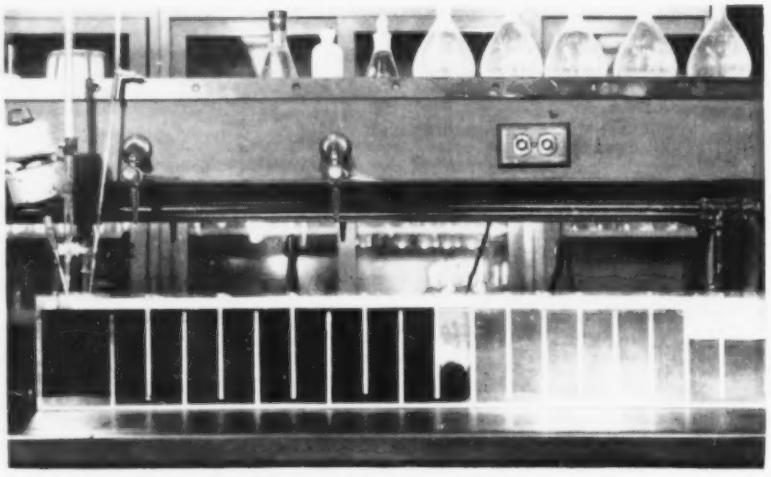
The sampling pump is located at a point beyond the convergence of all sewer lines leading from the plant. Samples taken from this location are representative composites of all wastes entering the municipal sewer system. As a result of efficient waste disposal, they are consistently below the maximum impurity limits allowed by the city.



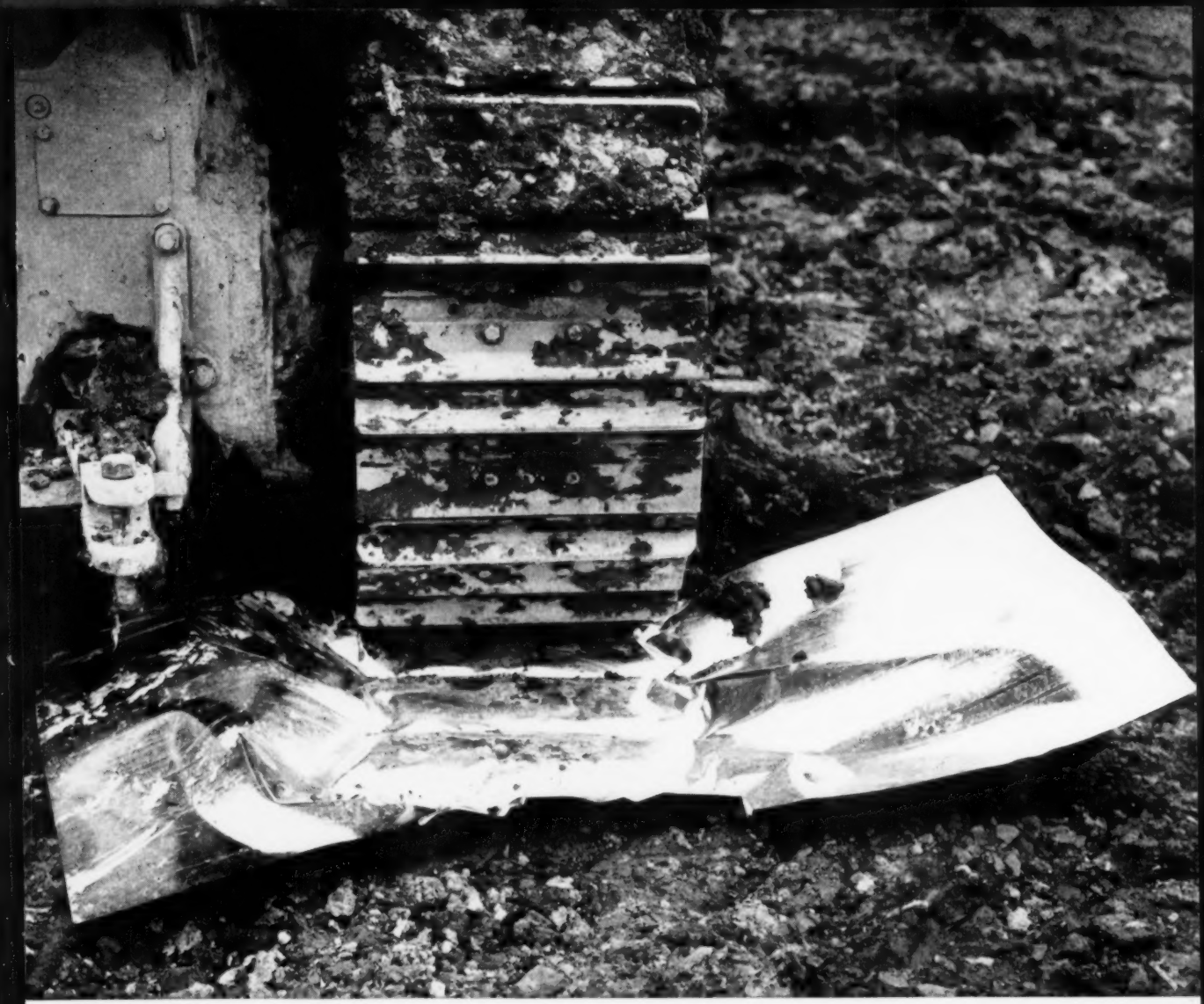
IT'S HARMLESS: Solids from 1800 gal of treated solution are caked to a two-inch depth on filter leaves after an hour's filtration.



READY FOR BURIAL: An air-actuated shaker dislodges harmless solid waste into a container. This material is then buried underground.



LOOKING AHEAD: Laboratory model of tank for oxidizing cyanide-bearing solutions has over-and-under baffles to direct liquid flow.



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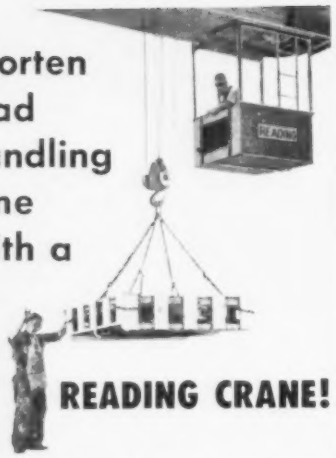

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● One well-known stove manufacturer wanted to speed-up assembly—a call to Reading Engineers led to complete solution. A 10-ton, double I-Beam, cab-controlled Reading Crane brought even better results than expected.

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"JUST FINE, THANK YOU!"
...like 800,000 Americans who have been cured of cancer because they went to their doctors in time. To find out how to guard yourself against cancer, write to "Cancer" in care of your local Post Office.
AMERICAN CANCER SOCIETY

FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 101.

V-belts

Machines and processes used in producing V-belts are discussed in a booklet. Rubber compounding, preparation of fabric, building steps, curing and finishing are its subjects. (Goodyear Tire & Rubber Co.)

For free copy circle No. 1 on postcard, p. 101

Induction Heater

High frequency motor-generator induction heating equipment is covered in a bulletin. These units handle brazing, annealing, deep hardening, forging, and melting operations. Described are 960, 3000 and 10,000-cycle high-frequency setups available in sizes from 30 to 1250 kw. (Allis-Chalmers Mfg. Co.)

For free copy circle No. 2 on postcard, p. 101

Electric Brakes

Electric brakes, clutches and controls for miniature mechanisms or high torque machine drives are dealt with in an 8-page booklet. (Warner Electric Brake & Clutch Co.)

For free copy circle No. 3 on postcard, p. 101

Tank Lining

Elastomer tank lining products are covered in a bulletin. It describes prevulcanized neoprene protective tank lining stock which is cured by radio frequency energy. This material is especially adaptable for field applications since adhesion requires neither heat nor pressure to obtain permanent rubber-to-metal bonds. (Rhee Elastic Thread Corp.)

For free copy circle No. 4 on postcard, p. 101

Offshore Platforms

Requirements for a proposed offshore platform which will operate in waters up to 600 ft are discussed in a 16-page brochure. (R. G. LeTourneau, Inc.)

For free copy circle No. 5 on postcard, p. 101

Machine Tools

"Light-heavyweight" machine tools are detailed in a 48 page catalog. It includes data on one maker's band saws, circular saws, cut-off machines, drill presses, radial drills, grinders, lathes, a spindle shaper, a scroll saw, a belt and disc surfacer, and a jointer. (Walker-Turner Div., Rockwell Mfg. Co.)

For free copy circle No. 6 on postcard, p. 101

Lubricants

Tough lubrication jobs and how certain products can make them easier are subjects of a 16-page brochure. It also describes a firm's modern facilities, laboratories, and research programs. (The Brooks Oil Co.)

For free copy circle No. 7 on postcard, p. 101

High-torque Bolts

Advantages of high torque bolts are detailed in a bulletin. It gives

applications, strength characteristics, etc. of the bolts. They come in superalloys and titanium for uses up to 1500°F. (Hi-Shear Rivet Tool Co.)

For free copy circle No. 8 on postcard, p. 101

Forgings

How brass, bronze and aluminum forgings help two manufacturers turn out a better end product is told in a 4-page publication. (Copper & Brass Research Assn.)

For free copy circle No. 9 on postcard, p. 101

Radial Drill

Power indexing, turret type radial drills are detailed in a 6-page folder. Drills feature six spindles, automatic clamping. (Berg Tool Mfg. Co., Inc.)

For free copy circle No. 10 on postcard, p. 101

Melting Furnaces

Coreless induction melting furnaces are described in a 4-page bulletin. These 60-cycle units work with ferrous and nonferrous metals. (Ajax Engineering Corp.)

For free copy circle No. 11 on postcard, p. 101

Name Plates

The finishing touch on many products is a nameplate. So it's only natural to try to make it a "crowning touch" too. A new folder tells how one company provides services from original design to finished nameplate. (Stemac, Inc.)

For free copy circle No. 12 on postcard, p. 101

Locking Pins

Locking pins for aircraft, other uses are described in a 4-page folder. These quick-release pins cannot be accidentally removed. (D. W. Price Corp.)

For free copy circle No. 13 on postcard, p. 101

Chromium Alloy

A 60-16 nickel-chromium-iron resistance alloy is analyzed in a 16-page publication. This alloy is widely used on electrical heating ap-

WILLIAMS

TOOLS OF INDUSTRY

FOREMOST! Since...
Famous old "999" scorched the rails at 112 mph in 1893
The "Oceanic" ushered in the luxury ocean liner era in 1870
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J.H.WILLIAMS & CO.
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Since 1882, Wiliams has anticipated the tool requirements for production and maintenance in the transportation industry. Among the hundreds of patterns and sizes of tools which Williams forges are Carbon Steel Wrenches... Alloy Steel Superrenches® and Supersockets®... and a wide range of extra tough "C" Clamps.

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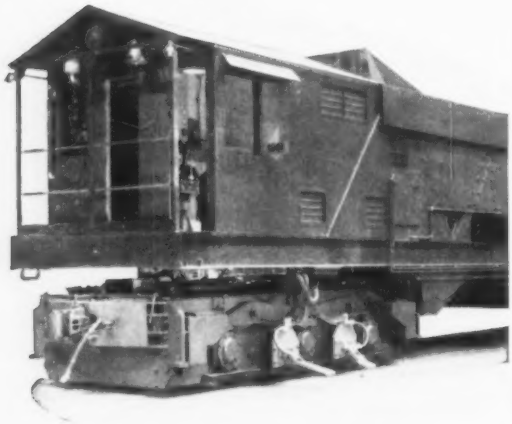
sixty years of
car building progress
with an international
reputation for
quality.



100-TON BOTTOM DUMP
ORE TRANSFER

Each car Atlas builds is engineered to specific task performance . . . and designed for personnel safety.

ATLAS
CAR & MFG. CO.
1100 IVANHOE ROAD,
CLEVELAND 10, OHIO

FREE LITERATURE

plications where temperatures do not exceed 1700°F. It's also used for certain "cold" resistor applications which do not exceed 800°F. (Hoskins Mfg. Co.)

For free copy circle No. 14 on postcard, p. 101

Chemical Processes

In 16 pages, a manual discusses 57 chemical processes that take place daily in over 12,000 metalworking plants. It includes data on: cleaning, phosphating, conversion coating, protective coating, paint and carbon removing, rust removing and preventing, descaling, electroplating, inspecting, processing aluminum and maintaining of paint departments and other plant facilities. (Turco Products, Inc.)

For free copy circle No. 15 on postcard, p. 101

Lift Truck

Specifications of two outdoor fork trucks of 35,000 and 40,000-lb capacities are contained in a 6-page catalog. (Clark Equipment Co.)

For free copy circle No. 16 on postcard, p. 101

Aircraft Bolts

Data on 100° flush head aircraft bolts is contained in a bulletin. These fasteners have a new wrenching recess for more effective tightening. (Standard Pressed Steel Co.)

For free copy circle No. 17 on postcard, p. 101

Chemicals

A 4-page bulletin describes carbon and graphite products for chemical processing. (National Carbon Co., Div., Union Carbide Corp.)

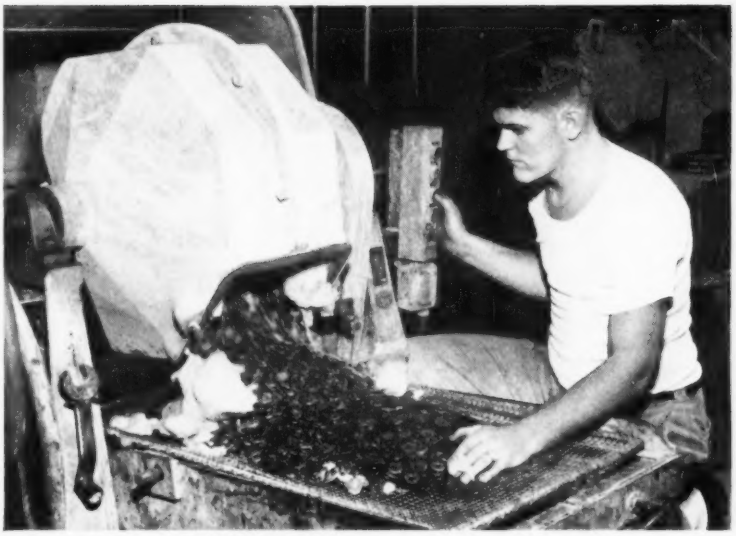
For free copy circle No. 18 on postcard, p. 101

Tumbling Abrasive

Tumbling abrasive of a new type is introduced in a bulletin. This material is aluminum oxide abrasive in chips and screened grain sizes for a wide range of use. (Simonds Abrasive Co.)

For free copy circle No. 19 on postcard, p. 101

Four Different TUMBLEX* Abrasives assure best possible results in barrel finishing. TUMBLEX "A", most popular for general needs, removes flash, scale, burrs and tool marks, while forming radii and finishes to required microinches. TUMBLEX "T" is bonded, triangular and fast-cutting for special intricate parts, and won't wedge in work slots or holes. TUMBLEX "S", exceptionally dense and long lasting, is bonded spheres that get into areas where other shapes won't reach. "A", "T" and "S" are all made of famous ALUNDUM* (aluminum oxide) abrasive. TUMBLEX "N" is natural stones, exclusively Norton, of rounded shapes that bring up high lustre, especially on die castings and soft metals.



HERE'S HOW TO

Choose the best abrasive for any metal finishing job

Better Polishing With Every Set-Up — wheels or belts — is easy when you standardize on Norton ALUNDUM abrasive grain. All types are extremely hard and tough, uniform in size, structure and chemical composition and have high capillarity for easy wetting. Type "S", sizes 14 to 90 grit and Type "R", sizes 100 to 240 grit, are noted for fast cutting and the satin finish which they produce. Type "B", sizes 20 to 600 grit, is an all-purpose, blocky, durable grain capable of producing fine finishes.

Fast Cut. Norton ARROW-BLAST* aluminum oxide grain cuts faster than natural abrasives and reduces dust on pressure blasting jobs to minimum. And remember, the less dust in any environment, the longer your operators can work, and the more they'll finish — at lower cost.

Norton tumbling, polishing and blasting materials add "Touch of Gold" advantages to countless applications

Your metal parts can range from tiny needles to hefty forgings. They may be simple or complicated, hard or soft. Whatever they require in polishing or finishing, you can get plenty of "Touch of Gold" benefits from the wide range of Norton abrasives. Find out how. Ask your Norton Distributor for the illustrative, instructive booklets on barrel-finishing, metal polishing, or both. Or write to NORTON COMPANY, General Offices, Worcester 6, Mass. Plants and distributors around the world.

*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries G336

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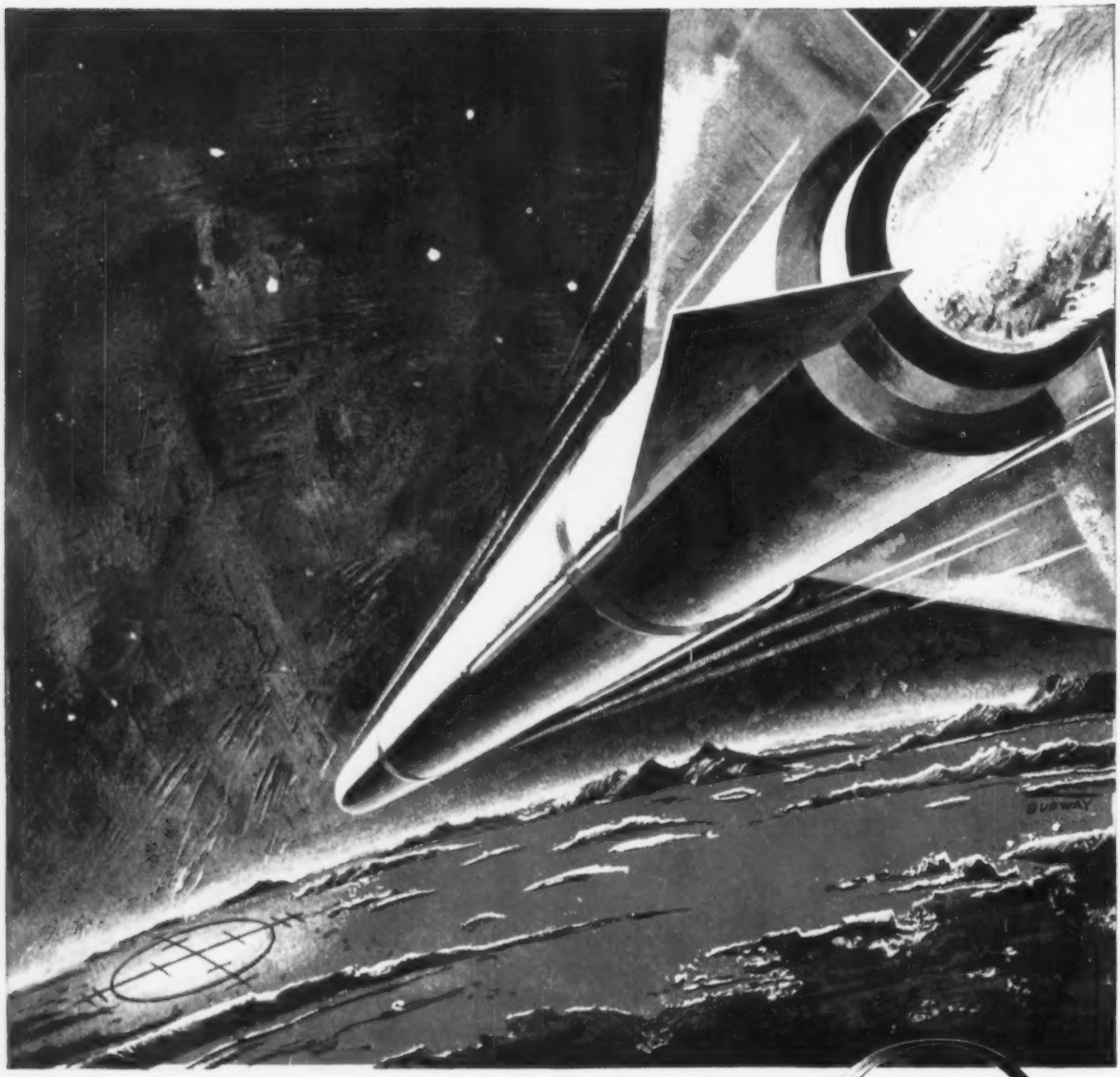
Abrasives • Grinding Wheels • Grinding Machines • Refractories

BEHR-MANNING DIVISION
Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes



Amweld® Hits Your Cost Target

Forming and flash butt-welding of mill-rolled or extruded shapes has cut the cost of rings and other circular parts by as much as 50%! Savings to one manufacturer in reduced machining time and material was $220.63 per ring. Where expensive metals such as titanium and heat-resistant alloys are used, flash butt-welding offers the most economical and practical method of manufacturing circular products.

Similar economies are also realized on carbon steels and less expensive metals.

Write today. Let our engineering department demonstrate how Amweld can help you cut production costs on rings, bands and circular components.

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120 Dietz Road • Warren, Ohio

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AMERICAN WELDING
The World's Leading Manufacturer of Welded Rings

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Stainless Steel

Just off the press is a technical digest of popular stainless steels. The 32-page catalog offers description, chemical composition, strength factors, physical properties and typical applications for a broad range of stainless types including the 200, 300 and 400 series. (Sharon Steel Corp.)

For free copy circle No. 20 on postcard

Embossing Presses

Knuckle-joint embossing presses are pictured in an 8-page bulletin. These presses come in capacities from 150 to 1000 tons for sizing, coining, embossing, etc. (Minster Machine Co.)

For free copy circle No. 21 on postcard

Big-Load Mover

How to move heavy loads in shipping, maintenance and service is told in a 16-page booklet. It shows how roller-skid setups can move loads from 3 to 300 tons quickly and economically. (Stokvis-Edera & Co., Inc.)

For free copy circle No. 22 on postcard

Rod Headers

Open die rod headers that upset heads on comparatively long rods which can't be handled on automatic rod headers are detailed in a brochure. (Waterbury Farrel Foundry & Machine Co.)

For free copy circle No. 23 on postcard

Circuit Breakers

Power circuit breakers are reviewed in two 8-page publications. One covers models rated 1000, 1500, 2500 mva, 600-1200 amp. The other deals with units rated 3500 and 5000 mva, 2000 amp. (General Electric Co.)

For free copy circle No. 24 on postcard

Blind Bolts

Blind bolts for high strength blind fastener applications are covered in an 8-page booklet. (Hi-Shear Rivet Tool Co.)

For free copy circle No. 25 on postcard

Vibrating Packers

Two standardized vibrating packers with container capacities to 350 and 500 lb are announced in a bulletin. These are self-contained units which make possible fast, uniform settling and compacting of materials in boxes, bags, drums and other containers. (Ajax Flexible Coupling Co., Inc.)

For free copy circle No. 26 on postcard

Sand Conditioner

For foundry use, a new sand-conditioning unit combines advantages of aeration, blending, mixing and magnetic separation. It comes in portable and stationary models. (Royer Foundry & Machine Co.)

For free copy circle No. 27 on postcard

Inert Gas Generator

A new inert gas system is outlined in a bulletin. It includes flow charts and costs analyses of the system. (Gas Atmospheres, Inc.)

For free copy circle No. 28 on postcard

Belting

Power transmission belting of polymer and chrome tanned leather is introduced in a catalog. It covers: Significant applications, belt description, belt selection, tensioning and maintenance, and bearing load reduction. (Extremultus, Inc.)

For free copy circle No. 29 on postcard

Press Welders

Precision spot and projection press welders are covered in a 6-page bulletin. It lists specifications

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **11/28/57**

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PERMIT No. 36
(Sec. 34.9 P.L.&R.)
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BUSINESS REPLY CARD
No postage necessary if mailed in the United States

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THE IRON AGE
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FREE LITERATURE

for resistance welders from 30 to 600 kva, 1275- to 18,000-lb electrode forces, 12- to 30-in. throat depth. (Precision Welder & Flexopress Corp.)

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Heat Crayon

Crayons that tell temperatures are described in a folder. These sticks tell heat by melting after marking, not by color changes. (Tempil Corp.)

For free copy circle No. 31 on postcard

Saw Sharpeners

Automatic saw sharpeners are introduced in a folder. It stresses the unit's simplicity, adaptability, accuracy and economy feature. (Hamco Machines, Inc.)

For free copy circle No. 32 on postcard

Regulator Valves

Sizing charts for one maker's sliding gate and plate regulator valves appear in a folder. These very accurate charts, if used correctly, can eliminate selection of undersized or oversized valves for any particular application. (Jordan Corp.)

For free copy circle No. 33 on postcard

Drilling

Close-center drilling is discussed in a data sheet. It explains how a unique new drill head and automatic index table might solve some of your production drilling problems. (Con Ray Corp.)

For free copy circle No. 34 on postcard

Punch Press

A data sheet reviews features of a 15-ton punch press. This floor type model is described as extremely rugged. (Kenco Mfg. Co.)

For free copy circle No. 35 on postcard

Heat Treating

Facilities of a large commercial heat treating firm are described in a company publication. In another article, it covers use of make-up air with gas-fired line burners for dust-free conditioning of critical assembly areas. (Surface Combustion Corp.)

For free copy circle No. 36 on postcard

Anti-rust Wrap

Methods of using a rust inhibitive packaging paper are detailed in a 6-page bulletin. This wrap prevents corrosion of ferrous metal parts. It eliminates the need for applying a protective oil coating and saves the cost and trouble of cleaning parts before use. (The Marvellum Co.)

For free copy circle No. 37 on postcard

Hydrauliscope

An engineering bulletin gives technical data on a hydrauliscope. This electronic analyzer utilizes oscilloscopic principles to measure pressure activity and phenomena in the operation of hydraulic systems. (Aeroquip Corp.)

For free copy circle No. 38 on postcard

Screwdrivers

More than 30 basic air motors and torque limiters for multi spindle screw drivers and nut runners are outlined in a bulletin. (Chicago Pneumatic Tool Co.)

For free copy circle No. 39 on postcard

Surface Grinder

Precision surface grinders are reviewed in a 6-page catalog. It contains capacities, weights and specifications of three new models. (Abrasive Machine Tool Co.)

For free copy circle No. 40 on postcard

Radiography

Industrial radiographic materials are described in a pamphlet. It contains a guide chart for selection of film for various material thicknesses. Recommended development technics are also listed. Relative speed and recommended development of various films for x-ray diffraction are also reviewed. (Eastman Kodak Co.)

For free copy circle No. 41 on postcard

Setup Prevents Mixup Of Coil Materials

In shops where small parts are made from different materials, mixups can happen. But they shouldn't.

Some firms check incoming coils by heat treating a sample, giving this a hardness test. This takes hours.

Now one parts maker separates coils electronically, quickly.

▪ Separation of steel coils used to make high strength fasteners is done electronically in seconds in one firm's production setup.

At Ramset, Fastening System Div., Olin Industries, Inc., Cleveland, coils are cold headed into driving pins and threaded studs. These are used to penetrate hard surfaces such as steel and concrete. Naturally, the manufacturers think it's extremely important that the proper material be used for each fastener.

Watch Incoming Coils—Receiving inspectors keep a careful check on incoming raw materials. They make sure that low carbon steel coils aren't mixed with shipments of high carbon steel coils used as raw material for the fasteners. A low carbon steel fastener would, in all probability, fail to penetrate the surface into which it was fired.

Ten to 20 of 250 to 300-lb coils are processed each day.

Old Way Spent Time—Formely,

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 101. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

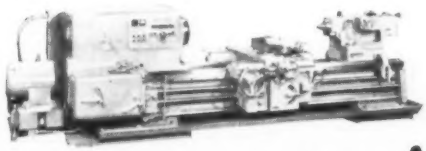
said the chip...

"I do a tale unfold"

This lathe chip, like many, many others, will go to the scrap pile. But there can be gold in the story that it tells.

Its color, size and shape pose questions like these: Is too much heat being generated by excessive speed, thereby causing short tool life and work distortion? Is speed too low, with resultant production loss? Is the rated horsepower of the machine too low or possibly too high for the expected metal removal? Is work finish unsatisfactory? Compressed into one overall question, is the inbuilt productiveness of the machine being realized on every cut of every part, day after day?

There's one certain, affirmative answer. Use Monarch's ultra-modern lathes—the Series 62 Preselector Dyna-Shift; the Series 80 and 90 Heavy Duty Dyna-Shift; the Series EE Model 1000. Chips from them are daily unfolding tales of increased output and lengthened tool life. It's quite possible the lathe chips in *your plant* would tell a story of real cost reduction, if "Made By Monarch". *The Monarch Machine Tool Company, Sidney, Ohio.*



You've never seen another machine like the Monarch Dyna-Shift Lathes with their "thinking headstocks." The Series 90 (above) is typical of a complete range of sizes featuring the Dyna-Shift way to reduced turning costs.

Monarch

TURNING MACHINES

FOR A GOOD TURN FASTER . . . TURN TO MONARCH

How to produce low alloy welds to resist tons of torture

Job Report Courtesy of
Food Machinery and Chemical Co.
Ordnance Division, San Jose, Calif.

WELD WITH ARCOS

LOW ALLOY ELECTRODES

This 22½ ton armored personnel carrier proves an important point. When working with hard-to-weld low-alloy plate, and welds must be extra strong and tough in the "as welded" condition, it pays to use the highest quality weld metal available. In this case, Arcos Tensilend 100, a low hydrogen coated electrode produced weld metal that matched the physical and chemical properties of the base metal. In addition, it did the job with less nickel than the 19-9 modified electrode formerly used. There was no preheat, no postheat . . . and complete freedom from cracking. ARCOS CORPORATION, 1500 S. 50th St., Philadelphia 43, Pa.

TECHNICAL BRIEFS

quality-control men checked incoming coils by heat treating a sample. Giving it a hardness test afterward supplied the information. This took an inspector up to two hours a day.

Now, an electronic unit supplied by Brush Electronics Co., Cleveland does the job. It reduces checking time to seconds per coil. And it even distinguishes between ASTM 1060 and 1062 series steels.

Self-Contained Unit—The setup is a completely self-contained, portable unit. Built for use by shop personnel with limited instructions, it operates on the principle of comparing thermo-electric voltages generated between two electrodes and

Receiving inspector tests a coil for hardness.

the metal being examined. A range switch allows selection of measurement sensitivities to reveal minute differences in a metal's chemical and/or physical properties.

Use of this instrument at the firm saves hours of inspection time each week. Not only this, it also prevents costly, time-consuming resorting jobs involving thousands of fasteners.

Deposits Metal Fast

Mild steel iron powder electrodes of a new type deposit metal at the rate of 17 lb per hour (100 pct work factor). This rate is accomplished via an extra heavy iron pow-

der coating together with increased machine settings.

Mechanical properties of the deposits are comparable to or better than AWS E6020-30 classifications, says Air Reduction Co., Inc., the developers.

Simple Checks Improve Spray Gun Efficiency

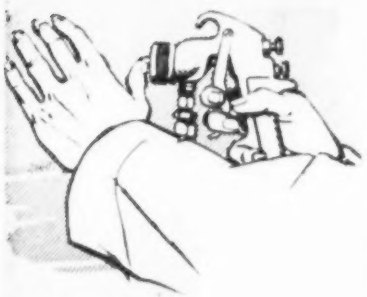
You can keep up spray gun efficiency by following a few simple rules. Chances are if you use spray setups extensively that you follow them already. However, it is a good checklist to review in order to get the most from your equipment.

The tests, as recommended by DeVilbiss Company engineers, include the following:

Open the gun wide by turning the spreader adjustment full open; back off the fluid screw until the first thread shows.

Check Pressure—Adjust the air transformer to 40-lb pressure for lacquer and acrylics or 60-lb pressure for enamels.

Hold the gun 6 to 8 in. from the test surface; give the trigger one full

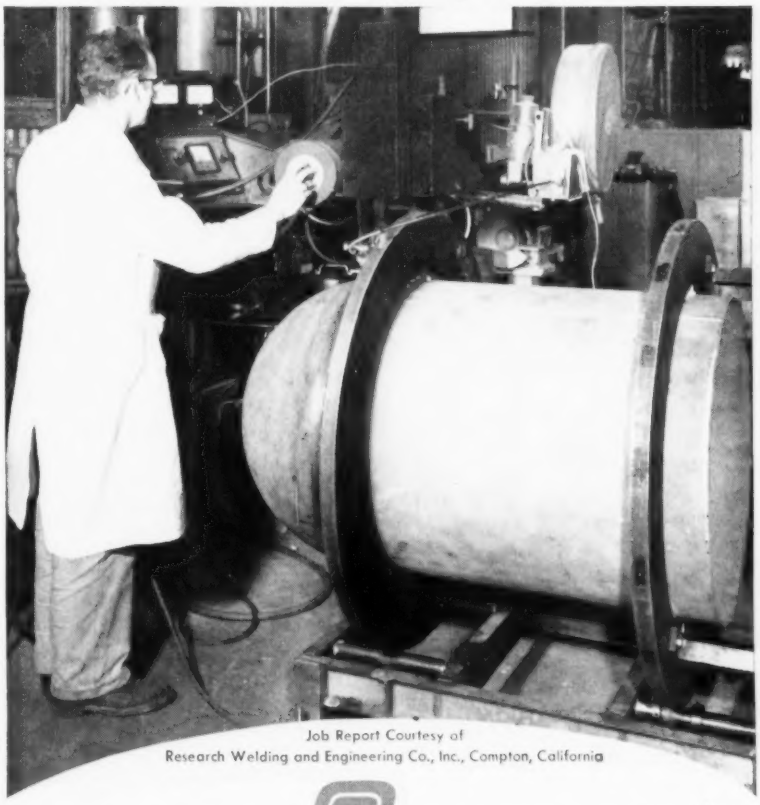


When making test pattern, hold gun hand length from surface.

pull, then release it. Check the pattern to be sure: (1) coverage is uniform from top to bottom; (2) automization is uniformly fine; (3) the pattern is true and free from distortion.

If any of these fail to check, the spray gun is defective. It can result in a waste of material, time and effort, the engineers warn, as well as poorer quality jobs.

Weld from one side only . . . Get X-ray quality welds



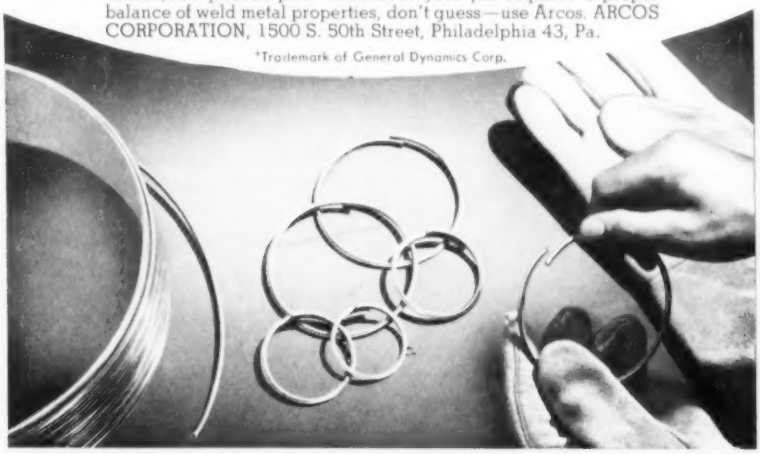
Job Report Courtesy of
Research Welding and Engineering Co., Inc., Compton, California

USE THE ARCOS

EB* WELD INSERT

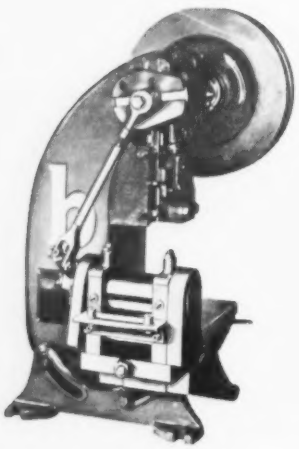
This welded missile tank had to weigh less than 600 pounds and yet contain air under pressure of 3,000 p.s.i. Arcos EB* Consumable Weld Inserts were used in automatic inert gas arc welding of the dished heads to the tank body. The inserts saved weight by eliminating back-up rings. They also allowed welding to be done conveniently from one side only and produced 100% x-ray quality root passes. Chromenar CMV coiled wire for submerged arc welding was used to complete the welds. After heat treatment the welds matched the base metal, with tensile strength in excess of 200,000 pounds p.s.i. Whenever your job requires a proper balance of weld metal properties, don't guess—use Arcos. ARCOS CORPORATION, 1500 S. 50th Street, Philadelphia 43, Pa.

*Trademark of General Dynamics Corp.



New Production Ideas

Equipment, Methods and Services



Roll Feed Features New Clutch Mechanism

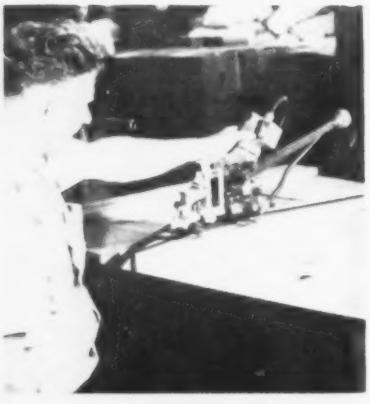
Based on a friction spring wrapped around a shaft, a new clutch mechanism fits one maker's roll feeds. It works like this: As torque is applied in the same direction as the spring is wound, the spring instantly tightens around the shaft, transmitting rotational motion. When the direction is reversed, the spring loosens and slips freely on the shaft. This method of producing unidirectional motion is almost devoid of wear. It insures a highly accurate stroke length over the life of the roll feed unit, too. And it's free from slippage. Two coil springs wound in opposite directions and supplied with the roll feed provide a choice of right or left hand rotation. The roll feed comes in roll widths of 3, 5, 7 and 9 in. Rolls are hardened and ground. They are also available knurled or rubber covered. Stroke lengths are 0 to 3-in. cutoff or 0 to 6-in. cutoff. (Benchmaster Mfg. Co.)

For more data circle No. 45 on postcard, p. 101

Testing Machine Has Fixed Center of Test

With this 10,000-lb tester the center of test always remains at the same point regardless of specimen length or amount of extension. Constantly situated 56½ in. above the floor, the center of test is easily observed. It allows auxiliary test equipment, such as ovens, to remain in fixed position for the duration of any given test. Employing two moving crossheads actuated by two ball and screw mechanisms, the machine achieves a motionless center of test by making the two crossheads pull against each other or compress toward each other. These ball and screw mechanisms have inherent design advantages. The point of contact between the screw and its opposing thread is a ball bearing. Rather than screw and thread turning against each other directly with consequent high friction, the bearing turns between them. (Baldwin-Lima-Hamilton Corp.)

For more data circle No. 46 on postcard, p. 101



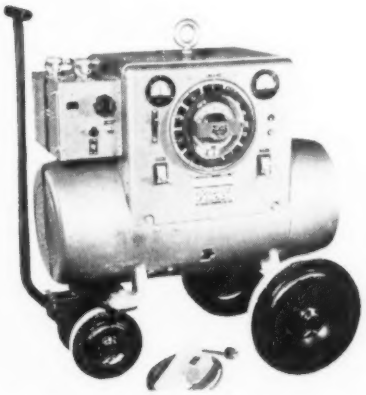
Power Strapper Binds Packages With Ease

Using a small, 115-v motor, this electric-powered strapping machine provides exact and unvarying tension with push button ease. Then, a single stroke hand lever seals and cuts the strap. Designed for continuous duty under rigorous work conditions, the strapper turns out perfect, high tension packages without worker fatigue. The last package at quitting time is as secure as the first or any other package produced on any shift. A touch with a wrench on conveniently located hex knob sets and holds calibrated tension. It works anywhere a light bulb will. A power strapping station can be established wherever 115-v, 60-cycle current is available. Even with 75 seals in its easy to load magazine, the unit weighs only two pounds. (Signode Steel Strapping Co.)

For more data circle No. 47 on postcard, p. 101

Gas Welding Unit

For factory installation only, this new inert gas welding unit attaches to one maker's motor generator arc welders. The attachment is designed for critical "TIG" welding applications where extremely low ripple (1 to 2 pct) direct-current welding current is required.



This'll weld such metals as stainless steel, high carbon steel, cast iron, silicon bronze, deoxidized copper and silver. The high frequency unit, complete with gas and water valves, is neatly mounted at the left of the welder control panel. (Hobart Bros. Co.)

For more data circle No. 48 on postcard, p. 101

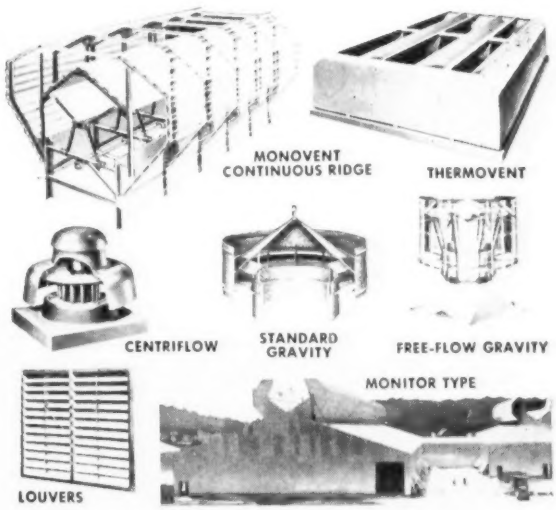
Sprays-on Ink

Toolmaker's Ink now comes in an aerosol spray can. You simply hold the can 12 to 14 in. from the

work; press the spray top, and spray a smooth, even coating over the work. (Crown Industrial Products Co.)

For more data circle No. 49 on postcard, p. 101

IF YOU HAVE VENTILATORS ON YOUR MIND SEE BURT



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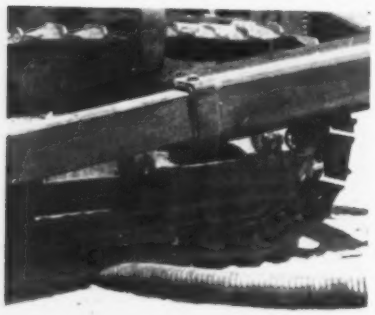
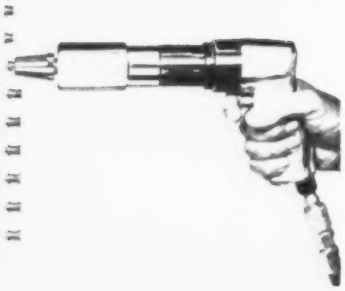


Tough Water Suction Hose Takes A Beating

If ever a hose was a glutton for punishment, this one is. Driving over it with a heavy truck or bulldozer doesn't harm it at all. When run over, it springs back into shape immediately afterward. Secret of its springiness is a continuous coil of hemp rope, specially treated and imbedded in thick rubber. This water suction hose is then wrapped with medium weight fabric plies to support end-pull or tugging action in suction service. Its inner tube is of smooth, non-porous rubber that handles gritty and mildly corrosive fluids. A corrugated cover of tough, black rubber resists aging, sun-checking, moderate abrasion. (B. F. Goodrich.)

For more data circle No. 50 on postcard, p. 101



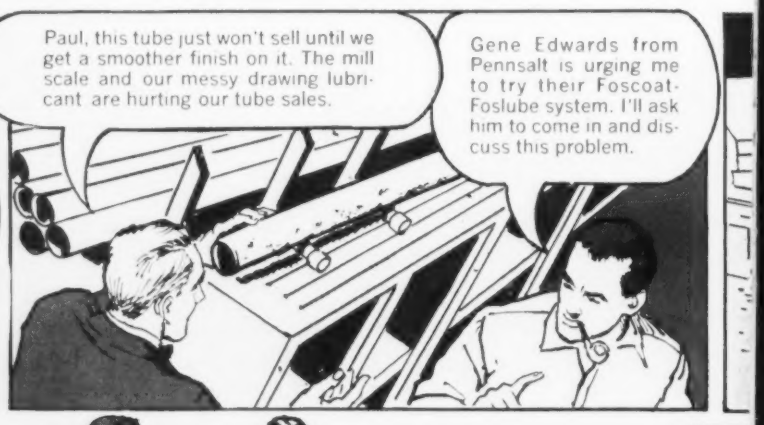
Locking Fasteners Have High Strength

High strength to weight ratio, high fatigue values, simplified tooling, fast silent installation, easy removal and reuse, and availability in an unlimited combination of materials are key features of this new fastener. The controlled-preload fastener lets each individual fastener maintain the same accurately controlled preload as all others in the same application. Its design also allows fast, silent and accurate installation on production lines and in the field. The fastener combines features of a bolt and rivet. It consists of two basic parts —a threaded pin and a threaded collar. The pin is of conventional design. (Hi-Shear Rivet Tool Co.)

For more data circle No. 51 on postcard, p. 101

ROUGH-PICKLED BAR

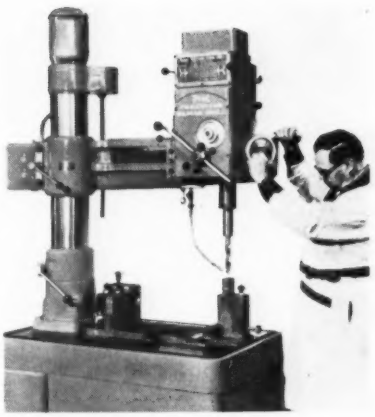
to CLEAN-DRAWN TUBE


Paul, this tube just won't sell until we get a smoother finish on it. The mill scale and our messy drawing lubricant are hurting our tube sales.
Gene Edwards from Pennsalt is urging me to try their Foscoat-Foslube system. I'll ask him to come in and discuss this problem.

"Pennsalt Foscoat® is a dry, adherent phosphate base, and Foslube® is a compatible soap-type lubricant. Used together, they'll clean up your severest draws—your shop, too—and give your tube the finish it deserves."

But how much will they cost, Gene?
No more than your present lube, which you admit isn't working out. You'll save production time, and dies too. Besides, putting on Foscoat and Foslube is a cinch.

Radial Drill Has Score-proof Alloy Column



This 3-ft radial drill incorporates a score-proof nickel-moly alloy column. The column is glass hard and turns on Timken bearings. In addition, the unit has hardened way inserts on the head and arm. Other advantages over the maker's previous models include: (1) A widened dovetail arm way triples the bearing surface for long lasting accuracy; (2) A single lever arm clamp locks the arm to the column more securely and much quicker than the former arm clamp; (3) A larger transmission encloses the feed gears in the oil bath for constant lubrication; (4) Drive gears have been widened to carry more load and 16 spindle speeds are now provided in more uniform steps; (5) A drill ejector in the spindle speeds tool changes, while raising and lowering the arm is accomplished by push buttons. (Veet Industries)

For more data circle No. 52 on postcard, p. 101

Metallizing Unit Sprays Any Metal In Wire Form

In line with current trends toward automation in high-speed production operations, a new electronically controlled metallizing machine has been developed. It's a rugged, heavy-duty, production unit that will spray any metal available in wire form. It is equally well suited for use as an individual unit or as a built-in part of a complete automation set-up for large-scale production. Driving the machine is a high capacity electric motor, monitored by an electronic control system which permits adjustment of wire speeds throughout the entire useable range without changing the grip on the wire or the position of the gas head. Once adjusted, wire speed is held constant regardless of fluctuations in load and operating conditions by the simple, re-

Paul, for heavy tube drawing like yours you need a reliable, uniform lube system flexible enough to meet all your requirements.

A MONTH LATER...
Gene, you solved our tube-drawing problem! Foscoat and Foslube are giving us "A BETTER START FOR OUR FINISH," as the Pennsalt ads say.

Let your Pennsalt salesman work with you to improve metalworking with chemical know-how . . . in cold working, cleaning, plating, and organic finishing. Learn more about Pennsalt service—mail the coupon.

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Pennsalt Chemicals Corp., Dept. 512
3 Penn Center, Phila. 2, Pa.

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processes washer-dryers
at WHIRLPOOL for perfect
porcelain
This Udylite Full Automatic operating in a plant of the Whirlpool Corporation helps give perfect porcelain finishes to the Whirlpool Washer-Dryers. It processes the parts through a 17 station cleaning and pickling cycle prior to porcelain coating. Since June 1, 1956, this Udylite machine has operated constantly 16 to 24 hours per day.
Nowhere is the fine porcelain finish more dependent on precision than in this cleaning, pickling, and nickel immersion cycle of the Udylite engineered machine. Every step of the cycle is so precisely timed that each part gets the same exact treatment prescribed by Whirlpool engineers.
Add Udylite experience to your knowledge for the right answer to your metal processing problems. Write us today.
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WORLD'S LARGEST
PLATING SUPPLIER

liable, industrial-type electronic control unit. Motor, gear box and control units are totally enclosed and sealed to prevent damage which might be caused by metal dust. The gas head employs an easily removable siphon plug. A built-in, quick-reset footage counter instantly shows the exact amount of metal sprayed. (Metallizing Engineering Co., Inc.)

For more data circle No. 53 on postcard, p. 101

Gage Block Comparator

Repeat readings with an accuracy of one millionth of an inch are achieved with this electronic gage block comparator. The instrument uses a caliper-type measuring principle. An electronic gage cartridge in the gage head

and another in the anvil contact opposite sides of the gage block. This provides point-to-point measurement from each surface, particularly useful in gaging thin, badly warped blocks. The operator's hands need never touch the gage head since fine adjustment is made with knurled knobs in the instrument's base. Interchangeable diamond points and a gage point lifting device to avoid scratching the work surface are other features. Its electronic amplifier offers interchangeable amplification of either 100,000 or 10,000 to 1. A cooling-off table, in front of the instrument, is available as an accessory. (The Sheffield Corp.)

For more data circle No. 54 on postcard, p. 101

The Iron Age Summary

Mills Face Up to Market Facts

Steel salesmen get baptism of fire as customers continue inventory cutbacks.

Slow 1958 first half is expected. But most mills are counting on last-half comeback.

■ The chips are down in the floundering steel market. Steel salesmen are getting their baptism of fire as the industry faces up to its slowest market since 1954.

Even the presidents and vice presidents of steel firms are taking to the road. They're using every sales trick in their arsenal in an effort to shore up sagging order books. Old-time salesmen, the ones who know what "hard sell" really means, are coming into their own. They're teaching the newcomers how to roll with the punch.

Mill Problems—Here's what the mills are up against: Steel users have set a course of inventory-cutting and are sticking to it. They know they are in the driver's seat and are cutting their own costs at the expense of the mills. They're living hand-to-mouth on inventories and counting on the mills to give them quick delivery when they need it.

These are hard times for the mills. They are set up to operate on a mass-production basis. It's a strain on their scheduling and distribution systems when they are forced to handle small orders. The fact that they have been able to do it is a tribute to their ability to meet changing conditions.

Delivery Angle—One of the biggest sales tools the mills now have is quick delivery. This has forced them to carry heavier-than-usual inventories of finished steel, backed up by unusually large stocks of semifinished.

The period of inventory correction probably will continue well into the first half of 1958. There could be a substantial pickup in demand in the last half if the forecasts for some of the major steel-using industries pan out.

Behind Late '58 Optimism—Here's why most steel producers are optimistic about prospects for last-half '58 business: Highway construction will be gathering momentum; oil and gas activity should be on a par with 1957, which will go down as a good year; shipbuilding is going strong; general construction volume will be high; appliances are expected to make a comeback, and automotive production could be strong, barring a strike.

Meanwhile, the mills know that their customers are chewing up steel at a fair rate. In fact some analysts say actual steel use in 1958 could be on a par with 1957, which may turn out to be a record year. They point out that steel consumption should not be confused with steel shipments in making evaluations.

What Could Happen — Under these conditions, a better-than-expected spurt in one or more of the major steel-using industries could spark a rush for more steel from the mills and put the industry back on the upgrade. This does not take into account the possibility of a spurt in defense outlays.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	1,843	1,946	2,048	2,486
Ingot Index				
(1947-1949=100)	114.7	121.1	127.5	154.8
Operating Rates				
Chicago	65.0	67.0	78.0	102.0
Pittsburgh	73.0	79.0	83.0	96.0
Philadelphia	85.0	86.0	88.0	104.0
Valley	66.0	63.5*	66.5	99.0
West	84.0	84.0	80.0	103.5
Buffalo	82.0	83.0	95.0	105.0
Cleveland	68.0	73.5*	92.0	106.5
Detroit	90.0	90.0	95.0	107.0
S. Ohio River	84.0	89.0*	88.5	96.0
South	94.0	60.5	69.0	95.0
Upper Ohio R.	65.0	71.0*	68.0	105.0
St. Louis	89.0	89.0	92.0	102.0
Northeast	40.0	40.0	41.0	100.0
Aggregate	72.0	76.0	80.0	101.0

*Revised

Prices At a Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	5.967	5.967	5.967	5.622
Pig Iron (Gross ton)	$66.42	$66.42	$66.42	$63.04
Scrap, No. 1 hvy (Gross ton)	$32.33	$32.67	$34.00	$64.33
No. 2 bundles	$24.33	$24.67	$25.67	$51.83
Nonferrous				
Aluminum ingot	28.10	28.10	28.10	27.10
Copper, electrolytic	27.00	27.00	27.00	40.00
Lead, St. Louis	13.30	13.30	13.30	15.80
Magnesium ingot	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	64.50
Tin Straits, N. Y.	87.25	89.375*	91.375	111.50
Zinc, E. St. Louis	10.00	10.00	10.00	13.50

PURCHASING

Founders Ask PA's For Job Data

Purchasers will get better, lower cost castings if they supply more information about product requirements.

Members of Gray Iron Founders' Society encourage move by circulating booklets, arranging clinics, and plant tours.

■ Many purchasing agents are finding they can get more out of a foundry than just iron.

In exchange for a little more information about a casting, many PA's get back a better job at a lower cost. Foundries, consultants and associations are encouraging the trend with bulletins, clinics, and plant tours.

Sound Suggestion — The experience of a Michigan purchasing agent is a good example of the benefits of putting out more information. Six foundries had taken a crack at one casting for this company. Scrap was running from 50 to 60 pct. The castings were not really satisfactory and were being accepted against better judgment. Finally a new foundry was called in. Its salesmen, without knowing the history, said that new pattern equipment was needed and persuaded the company to take the step. New castings were entirely satisfactory and at a price still competitive. The purchasing agent now sends out a little note with requests for quotations in which he urges the foundry to make suggestions regarding pattern equipment or changes which would produce better castings.

No Deviations—The root of the problem is the gulf existing between purchasing agents and foundry salesmen, according to Richard C. Meloy, marketing director, Gray Iron Founders' Society, Cleveland.

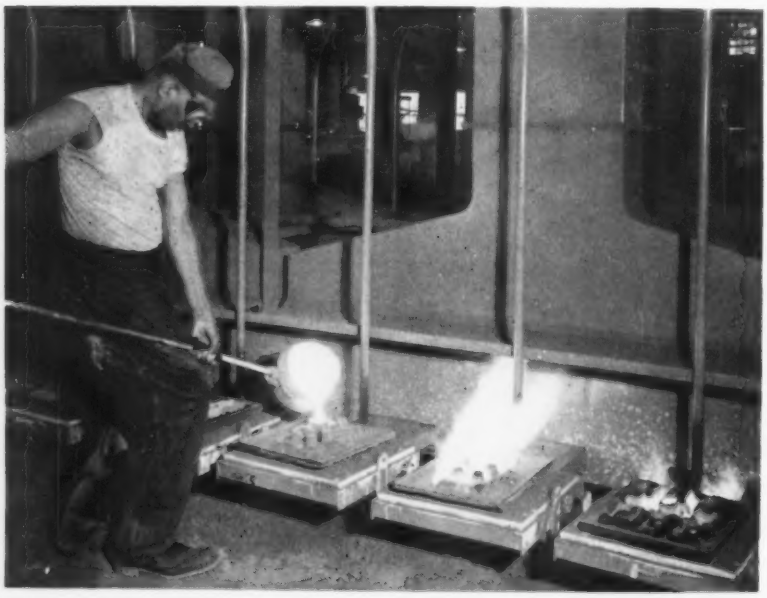
"Purchasing agents seem to assume the foundry will always suggest an improvement where they spot a possibility, but that's not the case. The foundrymen through long, hard experience and perhaps a few bitter examples follow a drawing to the letter, no matter how crazy it seems. They have pride in their craftsmanship. And they feel that suggesting changes carries a suggestion to the purchasing agent that they can't handle it the way it's designed."

The Society is taking several major steps to clear the air. Almost 25,000 copies of a booklet, "Engineering and Purchasing Requirements for Gray Iron Castings" have been requested and used in personal calls by members. The booklet covers information for intelligent foundry bidding including: quantity and delivery requirements; request for detailed blueprints; data on stresses, wear, corrosion, and service temperatures; properties data on strength, machinability, heat treatment, surface, finishing method, and dimensional tolerances; inspection requirements; and pattern information.

In addition the society is planning a series of regional clinics next year for castings purchasing agents and are cooperating in similar programs put on by foundries and consultants.

Purchasing agents are interested in the chance to learn more about foundry operations so they can do a better job. Earlier this year several foundries staged one day clinics for both Pa's and product designers in St. Louis, Pittsburgh, and Texas for capacity audiences.

A four-day clinic in Boston this fall was oversubscribed even before it was announced.



BUYER CAN HELP: Both founders and their customers are more satisfied with the job if enough data about the product is given foundry salesman before casting is made. (Gray Iron Founders' Society photo.)

don't lose your head!

When bearings fail, don't go to pieces... get on the phone and tell an authorized SKF* distributor your troubles. He will help you put things back in order, quickly. Every authorized SKF* distributor carries a complete line of SKF* ball and roller bearings and pillow blocks – a type for every use – and he is factory-trained by SKF* to assist you on any knotty production problems.

Call him for prompt, reliable service on all bearing requirements.

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Delivery Schedules Still Shorter

Mill estimates on delivery continue declining in a lack-luster market.

While sheet schedules hold fairly steady, there's a drop for structurals, light plate, and cold finished bar.

▪ In a lack-luster market, mill delivery promises are either holding steady or shortening.

Even for such tight products as sheared mill plate and wide flange beams lead times are dropping. As plate orders are filled mill carryovers disappear. Some producers — faced with ingot stocks normally used for other products—are converting them into plate for rapid sales.

Speed Requested — Mill delivery estimates, as checked against the last IRON AGE survey, also show a decline for standard structurals, light plate and cold-finished bar. Structurals have shrunk from 6-8 to 4-7 weeks. Light plate is down from 3-5 to 2-4 weeks. And cold-finished bar has fallen from 2-6 to 2-4 weeks in some areas.

Sheet customers are insisting on prompt scheduling of orders, often in terms of weeks rather than months. However, official sheet delivery schedules have either remained stable or dwindled only a week or so in the last month.

Cold-rolled sheet now averages 3-5 weeks with cold-rolled strip at 3-4. Both hot-rolled sheet and strip are 2-4 weeks.

Sheet and Strip—Customers continue to show little interest in advance ordering. They are demanding short delivery from the mills. Automotive tonnages remain the market's strongest prop as appliance orders drag. December business for the mills is even or below November levels. A few buyers are committing themselves for first quarter tonnages.

Plate and Structurals — While most mills are not current on heavy plates and wide flange beams, lead times on these products are shrinking. Standard structural deliveries run anywhere from 2-8 weeks depending on when orders can be fitted into rolling schedules. Some **Eastern** plate mills are stepping up export activity on plate. Producers making other products now slow on the market are converting excess ingots into plate as fast as possible.

Bar—Short delivery continues, with most types of hot-rolled product offered in 1-3 weeks. Some sizes of cold-finished bar are available from stock. December order bookings are falling behind those of November in several market areas. **West Coast** delivery promises from the mills have shrunk on both hot and cold bar.

Pipe and Tubing — Mills are liquidating their heavy stocks of standard pipe. While there's good demand for oil country seamless, standard seamless is still available for fourth quarter delivery. The operating schedule of a **Pittsburgh** mill shows these product rates: Continuous weld pipe—12 turns a week; electrical conduit—15 turns a week; and seamless pipe—20 turns a week.

Wire—Merchant wire continues in its seasonal decline. Manufacturers wire is slow, but steady with some demand from auto companies and their suppliers. Most orders are on a hurry-up basis as customers operate with rock-bottom inventories.

Stainless — Automotive buyers are carrying along whatever activity there is in a slow market. Some further let-down is expected during December. Meanwhile deliveries are running about 2-4 weeks with standard sizes of stainless often obtained in less time.

Delivery Promises at a Glance

	Pittsburgh	Chicago	Cleveland	Detroit	East	West Coast
CR Carbon Sheet	3 5 wks	2 4 wks	3 4 wks	4 6 wks	2 6 wks	4 6 wks
HR Carbon Sheet	2 5 wks	2 3 wks	2 3 wks	3 4 wks	2 5 wks	4 6 wks
CR Carbon Strip	2 3 wks	2 4 wks	3 4 wks	4 6 wks	2 6 wks	4 6 wks
HR Carbon Strip	2 3 wks	2 3 wks	2 3 wks	3 4 wks	2 5 wks	6 10 wks
HR Carbon Bars	1 3 wks	1 3 wks	3 wks	4 5 wks	2 4 wks	2 4 wks
CF Carbon Bars	1 4 wks	1 4 wks	2 3 wks	1 wk	2 4 wks	2 3 wks
Heavy Plate	Quota	Quota			Quota Plus	Quota
Light Plate	2 4 wks	2 3 wks	3 4 wks		2 4 wks	Quota
Merchant Wire	1 wk	1 wk	3 5 wks		Stock	3 4 wks
Oil Country Goods	2 8 wks	2 3 wks	8 12 wks		2 8 wks	
Linepipe	Quota	Quota	Quota		Quota	1st Q.
Buttweld Pipe	1 wk	1 wk	2 3 wks	2 3 wks	Stock	3 4 wks
Std. Structurals	4 8 wks	3 4 wks		4 8 wks	4 6 wks	6 wks
CR Stainless Sheet	2 4 wks		2 3 wks	1 wk	2 4 wks	
CR Stainless Strip	2 4 wks		2 3 wks	1 wk	2 4 wks	

COMPARISON OF PRICES

(Effective Nov. 26, 1957)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**: declines appear in *Italics*.

	Nov. 26 1957	Nov. 19 1957	Oct. 29 1957	Nov. 27 1956
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.925¢	4.925¢	4.925¢	4.675¢
Cold-rolled sheets	6.05	6.05	6.05	5.75
Galvanized sheets (10 ga.)	6.60	6.60	6.60	6.30
Hot-rolled strip	4.925	4.925	4.925	4.675
Cold-rolled strip	7.17	7.17	7.17	6.870
Plate	5.12	5.12	5.12	4.87
Plates, wrought iron	13.15	13.15	13.15	10.40
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	47.50
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.30	$10.30	$10.30	$9.95
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	8.65
Special coated mfg. ternes	9.55	9.55	9.55	9.20
Bars and Shapes: (per pound)				
Merchant bar	5.425¢	5.425¢	5.425¢	5.075¢
Cold finished bars	7.30	7.30	7.30	6.85
Alloy bars	6.475	6.475	6.475	6.125
Structural shapes	5.275	5.275	5.275	5.00
Stainless bars (No. 302)	45.00	45.00	45.00	40.75
Wrought iron bars	14.45	14.45	14.45	11.50
Wire: (per pound)				
Bright wire	7.65¢	7.65¢	7.65¢	7.20¢
Rails: (per 100 lb.)				
Heavy rails	$5.525	$5.525	$5.525	$5.075
Light rails	6.50	6.50	6.50	6.00
Semifinished Steel: (per net ton)				
Rerolling billets	$77.50	$77.50	$77.50	$74.00
Slabs, rerolling	77.50	77.50	77.50	74.00
Forging billets	96.00	96.00	96.00	91.50
Alloy blooms, billets, slabs	114.00	114.00	114.00	107.00
Wire Rod and Skelp: (per pound)				
Wire rods	6.15¢	6.15¢	6.15¢	5.80¢
Skelp	4.875	4.875	4.875	4.225
Finished Steel Composite: (per pound)				
Base price	5.967¢	5.967¢	5.967¢	5.622¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

	Nov. 26 1957	Nov. 19 1957	Oct. 29 1957	Nov. 27 1956
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.51	$70.51	$70.51	$67.76
Foundry, Valley	66.50	66.50	66.50	63.00
Foundry, Southern Cin'ti	71.65	71.65	71.65	67.17
Foundry, Birmingham	62.50	62.50	62.50	59.00
Foundry, Chicago	66.50	66.50	66.50	63.00
Basic, del'd Philadelphia	70.01	70.01	70.01	66.84
Basic, Valley furnace	66.00	66.00	66.00	62.50
Malleable, Chicago	66.50	66.50	66.50	63.00
Malleable, Valley	66.50	66.50	66.50	63.00
Ferromanganese, 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	11.75
Pig Iron Composite: (per gross ton)				
Pig iron	$66.42	$66.42	$66.42	$63.04
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	*$33.50*	$33.50	$33.50	$66.50
No. 1 steel, Phila. area	*33.00*	33.00	36.00	62.50
No. 1 steel, Chicago	*30.50*	31.50	33.50	64.00
No. 1 bundles, Detroit	*22.50*	23.50	22.50	60.50
Low phos., Youngstown	*30.50*	33.50	33.50	69.50
No. 1 mach'y cast, Pittsburgh	50.50	50.50	50.50	61.50
No. 1 mach'y cast, Philadel'a	50.50	50.50	50.50	58.50
No. 1 mach'y cast, Chicago	40.50	40.50	41.50	58.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	*$32.33*	$32.67	$34.00	$64.33
No. 2 bundles	*24.33*	24.67	25.67	51.83
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$15.38	$15.38	$15.38	$15.50
Foundry coke, prompt	$17.50-$19	$17.50-$19	$17.50-$19	$18-19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	27.00	27.00	27.00	40.00
Copper, Lake, Conn.	27.00	27.00	27.00	40.00
Tin, Straits, N. Y.	87.25†	89.375*	91.375	111.50
Zinc, East St. Louis	10.00	10.00	10.00	13.50
Lead, St. Louis	13.30	13.30	13.30	15.80
Aluminum, virgin ingot	28.10	28.10	28.10	27.10
Nickel, electrolytic	74.00	74.00	74.00	64.50
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	33.00	33.00	33.00	33.00

† Tentative. ‡ Average. * Revised.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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IRON AND STEEL SCRAP MARKETS

Prices in St. Louis Tops in Nation

St. Louis prices are anywhere from $4 to $11 higher than major consuming areas.

In other markets, the prospect of heavy automotive tonnages hurts dealer market.

■ The St. Louis scrap consuming area stands out as the highest market in the nation.

Price of No. 1 heavy melting scrap in this area is quoted at a $38 top. This compares with $34 in Pittsburgh; $31 in Chicago; $33.50 in Philadelphia, and $27.00 in Cleveland.

Explanation for the apparently out-of-line prices is that St. Louis is a scrap-deficient area. Mills are forced to pay higher prices at times to keep the scrap in the consuming area.

In other markets, the prospect of a deluge of automotive scrap descending on the market in December has eliminated any hope of a revival of dealer scrap.

Automotive lists are expected to yield up to 45,000 tons in some market areas. Dealer resistance, although building up everywhere, can have little effect against such a tide of choice scrap.

The market is trying to stabilize at a bottom before any climb in prices can be expected. Only a few declines were noted this week, particularly in Cleveland and the Valley, but the tone is no stronger; if anything weaker.

Pittsburgh — Prices of most grades are holding firm as dealers show continued resistance. One mill's price of $30 and better for No. 2 bundles is producing no rush of scrap. The loosening of money has put more spirit in dealers. On the other hand, two big mills may stay out of the market well past the first of next year. And heavy tonnages of industrial scrap are bearing down on the market. Immediate future will depend on how willing scrap men are to speculate on industrial lists.

Chicago—The prospect of 35,000 to 45,000 tons of automotive bundles hangs over this market. In a general atmosphere of gloom, prices are down another $1 or more for most grades. Mill offers to buy at even lower prices failed, at least for a time, to bring action. But expectations of even lower prices in December are common. Slipping mill rates more than offset the generally low supply of dealer scrap.

Philadelphia—There is little in the way of new business in this market. Most prices are holding steady with exception of heavy breakable cast and heavy turnings. Each dropped $1. An area mill was offering $1 below last week's price for No. 1 heavy steel but found no takers. Export continues at a moderate pace.

New York—The market is unchanged here, with very little activity. Purchase by a domestic mill of No. 2 heavy melting at $27 confirms the general price level. Most of the trade expect further declines before any strengthening.

Detroit—The market here tends toward weakness, but few dealers expect a sharp price drop. December automotive scrap tonnage will be up from November, but a decline is expected in scrap generation by non-automotive manufacturers. Most prices are down $1.

Cleveland — With over 42,000 tons of auto production lists being sold in this area for December, and no big market in sight, another price drop is in order. Dealer scrap is largely being by-passed in current movements, and sources are continuing to dry up. Railroad prices are fairly stable because tonnage offered has dropped off. Heavy plate scrap is also holding well because of dealer speculation.

St. Louis—Even though prices here are the highest in the nation, movement of scrap to the mills has slowed to a walk. Mills are expected to take more scrap in December, but will resist higher prices. Blast furnace grades are off $1 and railroad grades are also off.

Birmingham — Buying of scrap in this district is drying up. Steel scrap users are out of the market and orders for cast are limited to one or two carloads. Most dealers are refusing to accept prices now being offered, but brokers have been able to find enough distress cast to fill the small demand. Little change in the market is expected this year.

Cincinnati—The market is in the end-of-month doldrums and dealer stocks are fairly well cleaned out. Two more openhearths in the area are being shut down. Foundry business is slow.

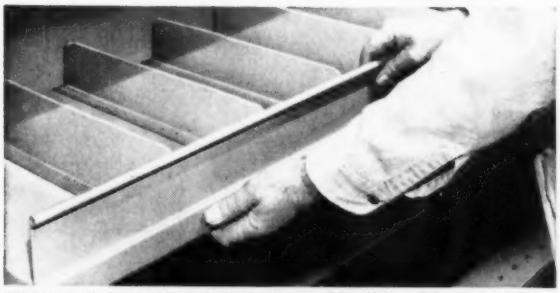
Buffalo—Prices dropped $1 on all grades in a continued inactive market. Shipment of scrap on the Lakes is slowing with the end of navigation. No activity is expected until after the first of the month.

Boston—The market continues as before—virtually dead. There is no activity to speak of, either export or domestic.

West Coast—No. 1 heavy melting scrap is in short supply in L. A. Exporters needing scrap to fill cargoes are reported to have paid $2 to $3 above quoted prices for limited tonnages.

Only New HALLOWELL *ERECTOMATIC*® Steel Shelving

cuts assembly time, permits fast repositioning of shelves —gives you these plus features



STRAIGHT-IN, STRAIGHT-OUT SHELF CHANGE. No tilting. No dismantling. No interference with any other shelf.

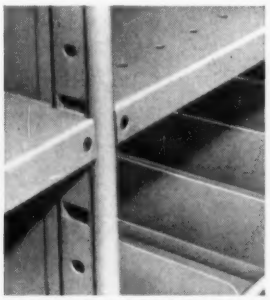
No matter what type of shelving you need—open, closed, bin units, ledge units, counters or cabinets—new Hallowell ERECTOMATIC® steel shelving makes the job easy. The unique built-in locking device*—developed by SPS—speeds assembly and rearrangement of shelves. To position a shelf, slide it into place on the shelf supports, press the locks, and the shelf is locked. To reposition a shelf, release the locks, pull the shelf straight out, slide it straight in on its supports at the new location, and press the locks. It takes only seconds to do the complete job. Made of prime steel, phosphate coated, and finished in SPS green baked-on enamel—other colors are available. Hallowell ERECTOMATIC steel shelving is stocked by leading industrial distributors and shop equipment dealers. For complete information, see the one nearest you. Or write Hallowell Shop Equipment Division, STANDARD PRESSED STEEL CO., Jenkintown 17, Pa.

*Patent applied for

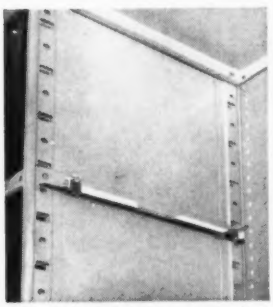
INDEPENDENT SHELF POSITIONING. Each shelf can be repositioned individually in seconds.

FULL USE OF SHELF AREA. No tees or angles, and beaded posts save valuable space.

COMMON SIDE PANELS AND POSTS save material between adjacent units in a rack. Back and side panels are one-piece.



BEADED POSTS AND FLANGED SHELVES prevent snagging of clothing or stored goods, protect workers.



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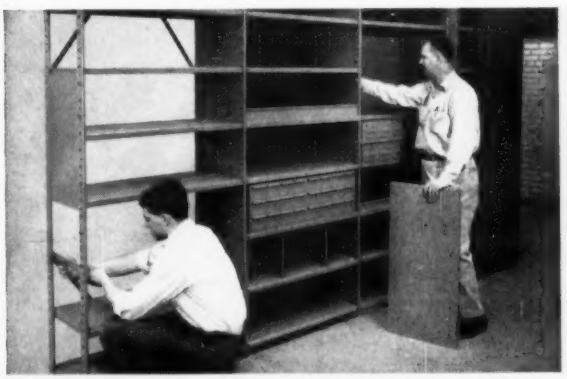

TWO MEN ASSEMBLED new Hallowell ERECTOMATIC steel shelving in just over 10 minutes. Closed unit was 36 in. wide, 18 in. deep, 7 ft. 3 in. high, complete with seven shelves. Standard models of other design required 13-55 min. Table shows test results.

Brand	Time to Assemble (Min.)	Units Per Hour
Erectomatic	10.42	5.75
A	13.23	4.53
B	14.24	4.21
C	16.30	3.68
D	18.12	3.31
E	25.03	2.40
F	55.03	1.09

HALLOWELL® SHOP EQUIPMENT DIVISION

STANDARD PRESSED STEEL CO.

SPS

JENKINTOWN PENNSYLVANIA

SCRAP PRICES *(Effective Nov. 26, 1957)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	32.00 to 34.00
No. 1 factory bundles	36.00 to 37.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	32.00 to 34.00
Machine shop turn	16.00 to 17.00
Mixed bor. and turn.	16.00 to 17.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Low phos. punchings plate	36.00 to 37.00
Heavy turnings	32.00 to 33.00
No. 1 RR hvy. melting	36.00 to 37.00
Scrap rails, random lgth	49.00 to 50.00
Rails 2 ft and under	56.00 to 57.00
RR steel wheels	48.00 to 49.00
RR spring steel	48.00 to 49.00
RR couplers and knuckles	48.00 to 49.00
No. 1 machinery cast	50.00 to 51.00
Cupola cast	39.00 to 40.00
Heavy breakable cast	37.00 to 38.00

Chicago

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	30.00 to 31.00
No. 1 factory bundles	35.00 to 36.00
No. 2 bundles	19.00 to 20.00
No. 1 busheling	30.00 to 31.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Low phos. forge crops	43.00 to 44.00
Low phos. punchgs. plate	39.00 to 40.00
Low phos. 2 ft and under	38.00 to 39.00
No. 1 RR hvy. melting	36.00 to 37.00
Scrap rails, random lgth	41.00 to 42.00
Bending rails	48.00 to 49.00
Rails 2 ft and under	47.00 to 48.00
Locomotive tires cut	43.00 to 44.00
Cut boilers & side frames	40.00 to 41.00
Angles and splice bars	45.00 to 46.00
RR steel car axles	48.00 to 49.00
RR couplers and knuckles	42.00 to 43.00
No. 1 machinery cast	40.00 to 41.00
Cupola cast	35.00 to 36.00
Heavy breakable cast	33.00 to 34.00
Cast iron brake shoe	35.00 to 36.00
Cast iron wheels	39.00 to 40.00
Malleable	46.00 to 47.00
Stove plate	32.00 to 34.00
Steel car wheels	45.00 to 46.00

Philadelphia Area

No. 1 hvy. melting	$32.50 to $33.50
No. 2 hvy. melting	29.50 to 30.50
No. 1 dealer bundles	33.50 to 34.50
No. 2 bundles	23.50 to 24.50
No. 1 busheling	33.50 to 34.50
Machine shop turn.	21.00 to 22.00
Mixed bor. short turn.	22.00 to 23.00
Cast iron borings	22.00 to 23.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	30.00 to 31.00
Low phos. 5 ft and under	41.00 to 42.00
Low phos. 2 ft and under	42.00 to 43.00
Low phos. punchgs.	42.00 to 43.00
Elec. furnace bundles	36.00 to 37.00
Heavy turnings	28.50 to 29.50
RR steel wheels	45.00 to 46.00
RR spring steel	45.00 to 46.00
Rails 18 in. and under	64.00 to 65.00
Cupola cast	37.00 to 38.00
Heavy breakable cast	36.00 to 37.00
Cast iron car wheels	41.00 to 42.00
Malleable	56.00 to 57.00
Unstripped motor blocks	32.00 to 33.00
No. 1 machinery cast	50.00 to 51.00

Cleveland

No. 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	19.00 to 20.00
No. 1 dealer bundles	26.00 to 27.00
No. 1 factory bundles	28.00 to 29.00
No. 2 bundles	18.00 to 19.00
No. 1 busheling	26.00 to 27.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Cut structural & plates, 2 ft & under	33.00 to 34.00
Drop forge flashings	26.00 to 27.00
Low phos. punchgs. plate	27.00 to 28.00
Foundry steel, 2 ft & under	31.00 to 32.00
No. 1 RR heavy melting	32.00 to 33.00
Rails 2 ft and under	21.00 to 22.00
Rails 18 in. and under	54.00 to 55.00
Railroad grate bars	14.00 to 15.00
Steel axle turnings	15.00 to 16.00
Railroad cast	42.00 to 43.00
No. 1 machinery cast	44.00 to 45.00
Stove plate	40.00 to 41.00
Malleable	54.00 to 55.00

Youngstown

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 dealer bundles	29.00 to 30.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	13.00 to 14.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Low phos. plate	30.00 to 31.00

Buffalo

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	26.50 to 27.50
No. 1 busheling	29.00 to 30.00
No. 1 dealer bundles	29.00 to 30.00
No. 2 bundles	23.50 to 24.50
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	15.00 to 16.00
Low phos. plate	35.00 to 36.00
Scrap rails, random lgth	41.00 to 42.00
Rails 2 ft and under	51.00 to 52.00
RR steel wheels	38.00 to 39.00
RR spring steel	34.00 to 35.00
RR couplers and knuckles	34.00 to 35.00
No. 1 machinery cast	41.00 to 42.00
No. 1 cupola cast	36.00 to 37.00

Detroit

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$22.00 to $23.00
No. 2 hvy. melting	19.00 to 20.00
No. 1 dealer bundles	22.00 to 23.00
No. 2 bundles	17.00 to 18.00
No. 1 busheling	21.00 to 22.00
Drop forge flashings	21.00 to 22.00
Machine shop turn.	8.00 to 9.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	10.00 to 11.00
Cast iron borings	10.00 to 11.00
Low phos. punchgs. plate	22.00 to 23.00
No. 1 cupola cast	30.00 to 31.00
Heavy breakable cast	25.00 to 26.00
Stove plate	25.00 to 26.00
Automotive cast	33.00 to 34.00

St. Louis

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	26.00 to 27.00
Machine shop turn.	14.00 to 15.00
Cast iron borings	16.00 to 17.00
Shoveling turnings	16.00 to 17.00
No. 1 RR hvy. melting	38.50 to 39.50
Rails, random lengths	47.00 to 48.00
Rails, 18 in. and under	48.00 to 49.00
Angles and splice bars	40.00 to 41.00
Std. steel car axles	44.00 to 45.00
RR specialties	43.00 to 44.00
Cupola cast	42.00 to 43.00
Heavy breakable cast	35.00 to 36.00
Cast iron brake shoes	37.00 to 38.00
Stove plate	35.00 to 36.00
Cast iron car wheels	33.00 to 34.00
Rerolling rails	46.00 to 47.00
Unstripped motor blocks	35.00 to 36.00

Boston

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$23.00 to $24.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 dealer bundles	23.00 to 24.00
No. 2 bundles	13.00 to 14.00
No. 1 busheling	23.00 to 24.00
Elec. furnace, 2 ft & under	29.00 to 30.00
Machine shop turn.	9.50 to 10.50
Mixed bor. and short turn.	9.50 to 10.50
Shoveling turnings	10.00 to 11.00
Clean cast chem. borings	15.00 to 16.00
No. 1 machinery cast	34.00 to 35.00
Mixed cupola cast	28.00 to 29.00
Heavy breakable cast	25.00 to 26.00
Stove plate	26.00 to 27.00
Unstripped motor blocks	27.00 to 28.00

New York

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	26.00 to 27.00
No. 2 dealer bundles	19.00 to 20.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	15.00 to 16.00
Clean cast. chem. borings	23.00 to 24.00
No. 1 machinery cast.	34.00 to 35.00
Mixed yard cast.	29.00 to 31.00
Charging box. cast.	30.00 to 31.00
Heavy breakable cast.	30.00 to 31.00
Unstripped motor blocks	27.00 to 28.00

Birmingham

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 dealer bundles	31.00 to 32.00
No. 2 bundles	16.00 to 17.00
No. 1 busheling	31.00 to 32.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	15.00 to 16.00
Electric furnace bundles	35.00 to 36.00
Elec. furnace, 3 ft & under	33.00 to 34.00
Bar crops and plate	38.00 to 39.00
Structural and plate, 2 ft	38.00 to 39.00
No. 1 RR hvy. melting	34.00 to 35.00
Scrap rails, random lgth	41.00 to 42.00
Rails, 18 in. and under	49.00 to 50.00
Angles & splice bars	40.00 to 41.00
Rerolling rails	50.00 to 51.00
No. 1 cupola cast	47.00 to 48.00
Stove plate	47.00 to 48.00
Charging box cast	22.00 to 23.00
Cast iron car wheels	37.00 to 38.00
Unstripped motor blocks	35.00 to 36.00

Cincinnati

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 dealer bundles	29.00 to 30.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Low phos., 18 in. and under	38.00 to 39.00
Rails, random length	44.00 to 45.00
Rails, 18 in. and under	54.00 to 55.00
No. 1 cupola cast	35.00 to 36.00
Hvy. breakable cast	32.00 to 33.00
Drop broken cast	47.00 to 48.00

San Francisco

No. 1 hvy. melting	$36.00
No. 2 hvy. melting	34.00
No. 1 dealer bundles	34.00
No. 2 bundles	26.00
Machine shop turn.	20.00
Cast iron borings	20.00
No. 1 RR hvy. melting	36.00
No. 1 cupola cast	47.00

Los Angeles

No. 1 hvy. melting	$36.00
No. 2 hvy. melting	34.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	24.00
Machine shop turn.	15.00
Shoveling turnings	19.00
Cast iron borings	19.00
Elec. furn. 1 ft and under (foundry)	46.00 to 47.00
No. 1 RR hvy. melting	36.00
No. 1 cupola cast	41.00

Seattle

No. 1 hvy. melting	$36.00
No. 2 hvy. melting	34.00
No. 2 bundles	27.00
No. 1 cupola cast	38.00
Mixed yard cast.	38.00

Hamilton, Ont.

No. 1 hvy. melting	$35.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	35.00
No. 2 bundles	25.00
Mixed steel scrap	30.00
Busheling	25.00
Bush., new fact., prep'd	35.00
Bush., new fact., unprep'd	29.00
Machine shop turn.	20.00
Short steel turn	24.00
Mixed bor. and turn.	20.00
Rails, rerolling	44.00
Cast scrap	45.00 to 50.00

A
SYMBOL
OF
LEADERSHIP
IN
IRON & STEEL
SCRAP
SINCE
1889

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NONFERROUS MARKETS

Verbal Battles Mark Lead-Zinc Probe

Interrogation of witnesses from hearing floor prompts some sharp exchanges.

Miners officially ask import quotas, but are not 100 pct behind the plan.

■ No one expected the Tariff Commission hearing on lead-zinc to be sedate. There's too much at stake. But few expected the toe-to-toe verbal slugging that marked almost every session.

The hearing room was packed with interested parties, many of whom brought counsel. Witnesses could be questioned by anyone. The probing was pointed and personal, and tempers were on the brink of flaring many times.

The Tariff Commission will recommend action on tariffs or quotas to the President on the basis of information presented at this hearing.

Have Their Say—Testifying were mining states congressmen, domestic miners, labor unions, smelters, importers, representatives from countries that would be affected by a higher tariff or import restrictions, and trade associations.

Major consumers of both metals were present. In hallway discussions they referred to the opposition of higher tariffs and import quotas as "our side of the case," but had nothing to say at the hearings.

Charles E. Schwab, chairman, Emergency Lead-Zinc Committee, made the formal request for the boost in tariff rates for both metals.

Has Quota Plan—Edward H. Snyder, president of Combined Metals Reduction Co., and chairman of an Emergency Lead-Zinc Committee group to develop a quota plan, made the miners' plea for import restrictions. Mr. Snyder indicated, and later testimony corroborated, that all miners were not enthusiastic about an import quota. Of the seven members of Mr. Snyder's subcommittee only four voted in favor of the plan presented, two were opposed, and one member did not vote.

Questioning of Andrew Fletcher, president, St. Joseph Lead Co., brought out what appears to be a consensus of domestic miners. Mr. Fletcher indicated that he was opposed to import restrictions, but that if they were the only way to maintain a healthy domestic lead-zinc mining industry, then they should be enacted, at least temporarily.

How it Works—The Snyder plan sets the peril points for zinc at 14½¢ per lb, and lead at 17¢ per lb. Import quotas would be issued, on a historical basis, for each calendar quarter. They would total the difference between domestic consumption and domestic production. In addition, there would be a ceiling, over which imports could not enter the U. S. unless the going prices were higher than the peril points.

Nickel

General Services Administration isn't having any trouble stirring up buyers for its Nicaro, Cuba, nickel plant. To date 20 U. S. firms have shown interest in buying or leasing it. Official bids will be called for early in 1958.

It's a sure thing that this plant won't go for a song. GSA says if it can't get satisfactory bids it will continue, as now, to have the plant run by a subsidiary of National Lead Co.

Good Buy—Most industry observers believe Nicaro will be sold. It has good ore reserves, new equipment, good labor supply (less than 1 pct turnover), and is operating at a profit. One U. S. firm is reported to be spending almost $100,000 to prepare a knowledgeable bid.

The big question mark is taxes. Cuba now waives collection of corporate taxes because the U. S. own the plant. What her attitude would be toward a private owner is conjecture.

Freeport's Deal—Freeport Sulphur Co., now building a nickel plant in Cuba, will get a tax concession under Cuban Law Decree 1038, as a "new industry." For a limited time Freeport will pay only 17-18 pct instead of the normal 50 pct of her profits. But Freeport will also turn out cobalt, which is not now produced in Cuba.

A Cuban government representative doesn't dismiss the possibility of a buyer of Nicaro getting concessions similar to Freeport. He calls it a "debatable question."

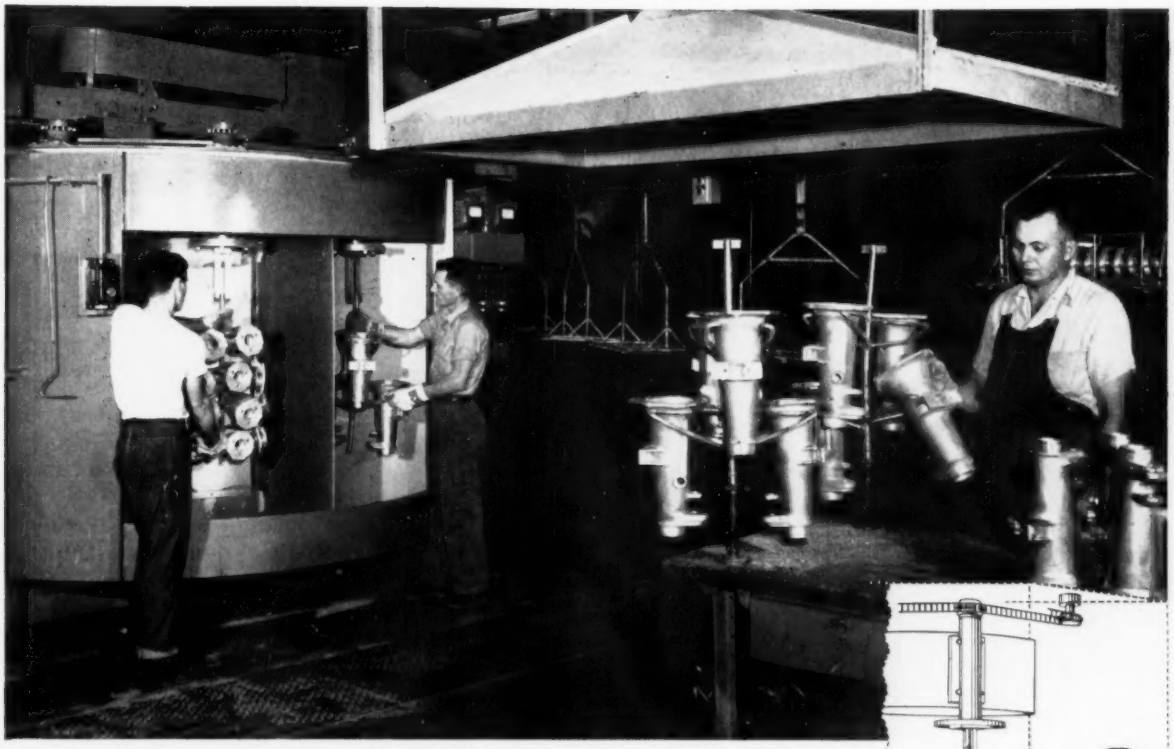
Tin prices for the week: Nov. 20—89.00; Nov. 21—88.375; Nov. 22—87.125; Nov. 25—87.25; Nov. 26—87.25.*

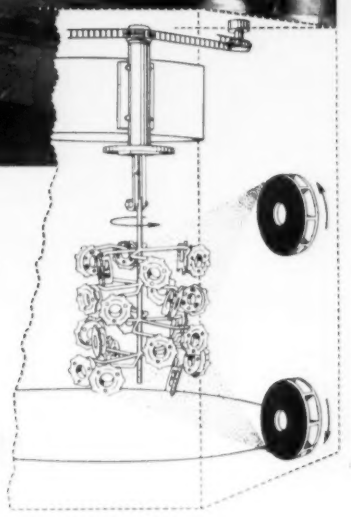
*Estimate.

Primary Prices

(cents per lb)	Current price	last price	date of change
Aluminum pig	26.00	25.00	8 1 57
Aluminum ingot	28.10	27.10	8 1 57
Copper (E)	27.00	28.50	9 3 57
Copper (CS)	25.00	25.50	11 21 57
Copper (L)	27.00	28.50	9 3 57
Lead, St. L.	13.30	13.80	10 14 57
Lead, N. Y.	13.50	14.00	10 14 57
Magnesium ingot	36.00	34.09	8 13 56
Magnesium pig	35.25	33.75	8 13 56
Nickel	74.00	64.50	12 6 56
Titanium sponge	165-250	165-225	5 5 57
Zinc, E. St. L.	10.00	10.50	7 1 57
Zinc, N. Y.	10.50	11.00	7 1 57

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic, (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. TIN: see above; other primary prices, pg. 122.





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NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish) and Plate
("F" temper except 6061-0)

Alloy	032	081	136-249	250-3
1100, 3003	46 6	44 3	43 6	42 7
5052	54 0	48 9	47 2	45 4
6061-0	51 4	47 0	45 2	45 1

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8	45 0-46 8	60 4-64 1
12-14	45 7-47 2	61 3-65 8
24-26	49 0-49 5	72 1-76 8
36-38	58 0-58 6	96 2-99 8

Screw Machine Stock—2011-T-3

Size*	¼	⅝-⅞	¾-1	1¼-1½
Price	63 0	62 5	61 0	58 6

Roofing Sheet, Corrugated
(Per sheet, 26" wide base, 16,000 lb)

Length* →	72	96	120	144
.019 gage	$1 420	$1 893	$2 367	$2 839
.024 gage	1 774	2 366	2 957	3 549

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type ↓ Gage →	250-3 00	250-2 00	188	081	032
AZ31B Stand. Grade		67 9	69 0	77 9	108 1
AZ31B Spec		93 3	95 7	108 7	171 3
Tread Plate		70 6	71 7		
Tooling Plate	73 0				

Extruded Shapes

factor →	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	69 6	70 7	75 6	89 2
Spec. Grade (AZ31B)	84 6	85 7	90 6	104 2

Alloy Ingot

AZ91B (Die Casting)	37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting)	40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks		87	

COPPER, BRASS, BRONZE

(Freight included on 5000 lbs)

	Sheet	Wire	Red	Tube
Copper	50 13		47 36	50 32
Brass, 70/30	44 02	44 56	45 26	46 93
Brass, Low	46 50	47 04	46 44	49 31
Brass, R L	47 37	47 91	47 31	50 18
Brass, Naval	48 27		42 58	51 68
Muntz Metal	46 39		42 20	
Comm. Bz.	48 78	49 32	48 72	51 34
Mang. Bz.	52 01		46 11	
Phos. Bz. 5%	69 07		69 57	

Free Cutting Brass Rod 32.30

TITANIUM

(10,000 lb base, f.o.b. mill)

Sheet and strip, commercially pure, $9.50-$10.60; alloy, $14.75; Plate, HR, commercially pure, $8.00-$8.75; alloy, $10.75. Wire, rolled and/or drawn, commercially pure, $7.50-$8.00; alloy $10.00; Bar, HR or forged, commercially pure, $6.15-$6.40; alloy, $6.15-$6.35; billets, HR, commercially pure, $6.00-$6.25; alloy, $6.00-$6.20.

PRIMARY METAL

(Cents per lb, unless otherwise noted)

Antimony, American, Laredo, Tex... 33.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium del'd ..... $ 1.70
Calcium, 99.9%, small lots ..... $ 4.55
Chromium, 99.8% metallic basis ... $ 1.31
Cobalt, 97-99% (per lb) .... $2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 39.50 to 53.50
Gold, U. S. Treas., per troy oz. $35.00
Indium, 99.9%, dollars per troy oz... $ 2.25
Iridium, dollars per troy oz. ....$80 to $90
Lithium, 98% ..... $11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New ork ..... $225 to $230
Nickel oxide sinter at Copper Cliff, Ont., contained nickel 71.25
Palladium, dollars per troy oz... $23 to $24
Platinum, dollars per troy oz... $82 to $87
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 90.375
Thorium, per kg. $43.00
Uranium, normal per kg. $40.00
Vanadium ..... $ 3.45
Zirconium sponge $10.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 Ingot
No. 115 ..... 27.25
No. 120 ..... 26.25
No. 123 ..... 25.50
80-10-10 Ingot
No. 305 ..... 31.25
No. 315 ..... 29.25
88-10-2 Ingot
No. 210 ..... 38.25
No. 215 ..... 34.00
No. 245 ..... 30.75
Yellow Ingot
No. 405 ..... 22.75
Manganese bronze
No. 421 ..... 24.50

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 25.25-26.00
0.60 copper max. 25.00-25.75
Piston alloys (No. 122 type) .. 24.25-25.00
No. 12 alum (No. 2 grade) ... 22.00-23.00
108 alloy 22.25-23.00
195 alloy 25.25-26.75
13 alloy (0.60 copper max.) ... 25.00-25.75
AXS-679 ..... 22.25-23.00

Steel deoxidizing aluminum, notch bar granulated or shot

Grade 1—95-97½% 23.00-24.00
Grade 2—92-95% 21.75-22.50
Grade 3—90-92% 20.50-21.50
Grade 4—85-90% 18.25-19.25

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	23	22¼
Yellow brass	17⅜	15¾
Red brass	20¼	19½
Comm. bronze	21	20¼
Mang. bronze	16⅛	15⅜
Yellow brass rod ends	17⅛	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	21
No. 2 copper wire	19½
Light copper	17¼
*Refinery brass	19¼
Copper bearing material	18¼

*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	21
No. 2 copper wire	19½
Light copper	17¼
No. 1 composition	19¼
No. 1 comp. turnings	18¾
Hvy. yellow brass solids	13
Brass pipe	15½
Radiators	15¼

Aluminum

Mixed old cast	13 —14
Mixed new clips	15½—16½
Mixed turnings, dry	13½—14½

Dealers' Scrap

Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire	18½—19
No. 2 copper wire	16½—17
Light copper	15 —15½
Auto radiators (unsweated)	11¾—12
No. 1 composition	15½—16
No. 1 composition turnings	15 —15⅛
Cocks and faucets	12 —12⅛
Clean heavy yellow brass	11 —11⅛
Brass pipe	12½—13
New soft brass clippings	13 —13⅛
No. 1 brass rod turnings	11¼—11¾

Aluminum

Alum. pistons and struts	5½— 6
Aluminum crankcases	10½—11
1100 (2S) aluminum clippings	14 —14⅛
Old sheet and utensils	10½—11
Borings and turnings	6½— 7
Industrial castings	10½—11
2024 (24S) clippings	12 —12⅛

Zinc

New zinc clippings	4 — 4⅛
Old zinc	3 — 3¼
Zinc routings	1¾— 2
Old die cast scrap	1½— 1¾

Nickel and Monel

Pure nickel clippings	45-50
Clean nickel turnings	40-45
Nickel anodes	45-50
Nickel rod ends	45-50
New Monel clippings	31-33
Clean Monel turnings	20-23
Old sheet Monel	28-30
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15

Lead

Soft scrap lead	8½— 9
Battery plates (dry)	4 — 4¼
Batteries, acid free	2¾— 3

Miscellaneous

Block tin	75 —76
No. 1 pewter	59 —60
Auto babbitt	39 —40
Mixed common babbitt	11 —11½
Solder joints	15 —15½
Siphon tops	42
Small foundry type	12½—12¾
Monotype	12½—12¾
Lino. and stereotype	11½—11¾
Electrotype	10½—10¾
Hand picked type shells	7½— 8
Lino. and stereo. dross	3½— 3¾
Electro dross	2¾— 3

(Effective Nov. 22, 1957)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$114.00 *B3*		5.325 *B3*	7.80 *B3*	5.325 *B3*						
	Buffalo, N. Y.	$77.50 *R3, B3*	$96.00 *R3, B3*	$114.00 *R3, B3*	6.225 *B3*	5.325 *B3*	7.80 *B3*	5.325 *B3*	4.925 *R3, B3*	7.15 *S10*	7.325 *B3*			
	Phila., Pa.									7.70 *P15*				
	Harrison, N. J.													15.05 *C11*
	Conshohocken, Pa.		$101.00 *A2*	$121.00 *A2*					4.975 *A2*	7.20 *A2*	7.325 *A2*			
	New Bedford, Mass.									7.60 *R6*				
	Johnstown, Pa.	$77.50 *B3*	$96.00 *B3*	$114.00 *B3*		5.325 *B3*	7.80 *B3*							
	Boston, Mass.									7.70 *T8*				15.40 *T8*
	New Haven, Conn.									7.60 *D1*				
	Baltimore, Md.									7.15 *T8*				
	Phoenixville, Pa.					5.325 *P2*		5.325 *P2*						
	Sparrows Pt., Md.								4.925 *B3*		7.325 *B3*			
	Bridgeport, Wallingford, Conn.	$80.50 *N8*	$101.00 *N8*	$114.00 *N8*						7.60 *W1*				
	Pawtucket, R. I. Worcester, Mass.									7.70 *N7* 7.70 *A5*				15.40 *N7* 15.20 *T8*
MIDDLE WEST	Alton, Ill.								5.125 *L1*					
	Ashland, Ky.								4.925 *A7*					
	Canton-Massillon, Dover, Ohio		$96.00 *R3*	$114.00 *R3, T5*						7.15 *G4*		10.45 *G4*		14.85 *C11*
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$77.50 *U1, R3*	$96.00 *U1, R3,W8*	$114.00 *U1, R3,W8*	6.225 *U1*	5.275 *U1, W8,P13*	7.75 *U1, Y1 W8*	5.275 *U1*	4.925 *W8, N4,A1*	7.25 *A1,T8 M8*			8.10 *W8, S9,I3*	15.05 *A1, S9,G4*
	Cleveland, Ohio									7.15 *A5,J3*		10.45 *A5*	8.10 *J3*	
	Detroit, Mich.			$114.00 *R3*					5.025 *G3, M2*	7.25 *M2,D1, D2,G3,P11*	7.425 *G3*	10.60 *D2* 10.55 *G3*	8.10 *G3*	
	Anderson, Ind.									7.15 *G4*				
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	$77.50 *U1*	$96.00 *U1*	$114.00 *U1, Y1*		5.275 *U1, I3*	7.75 *U1, I3*	5.275 *I3*	4.925 *U1, I3,Y1*	7.15 *Y1*	7.325 *U1, I3,Y1*	10.60 *Y1*	8.10 *U1, Y1*	
	Sterling, Ill.	$77.50 *N4*				5.275 *N4*			5.025 *N4*					
	Indianapolis, Ind.									7.30 *J3*				15.20 *J3*
	Newport, Ky.												8.10 *A9*	
	Middletown, Ohio													
	Niles, Warren, Ohio Sharon, Pa.		$96.00 *S1, C10*	$114.00 *C10,S1*					4.925 *R3, S1*	7.15 *R3,T4 S1*	7.325 *R3, S1*	10.50 *S1* 10.45 *R3*	8.10 *S1*	15.05 *S1*
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	$77.50 *U1, P6*	$96.00 *U1, C11,P6*	$114.00 *U1, C11,B7*	6.225 *U1*	5.275 *U1, J3*	7.75 *U1, J3*	5.275 *U1*	4.925 *P6*	7.15 *J3,B4, S7*			8.10 *S9*	15.05 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.225 *W3*	5.275 *W3*			4.925 *W3*	7.15 *W3,F3*	7.325 *W3*	10.50 *W3*		
	Youngstown, Ohio	$77.50 *R3*	$96.00 *Y1, C10*	$114.00 *Y1*			7.75 *Y1*			7.15 *Y1,J3*	7.325 *U1, Y1*	10.65 *Y1*	8.10 *U1, Y1*	15.05 *J3* 10.65 *Y1*
WEST	Fontana, Cal.	$88.00 *K1*	$105.50 *K1*	$135.00 *K1*		6.075 *K1*	8.55 *K1*	6.225 *K1*	5.825 *K1*	9.00 *K1*				
	Geneva Utah		$96.00 *C7*			5.275 *C7*	7.75 *C7*							
	Kansas City, Mo.					5.375 *S2*	7.85 *S2*						8.35 *S2*	
	Los Angeles, Torrance, Cal.		$105.50 *B2*	$134.00 *B2*		5.975 *C7, B2*	8.45 *B2*		5.675 *C7, B2*	9.05 *J3*			9.30 *B2*	17.25 *J3*
	Minnequa, Colo.					5.575 *C6*			6.025 *C6*	9.10 *K1*				
	Portland, Ore.					6.025 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$105.50 *B2*			5.925 *B2*	8.40 *B2*		5.675 *C7, B2*					
	Seattle, Wash.		$109.50 *B2*			6.025 *B2*	8.50 *B2*		5.925 *B2*					
SOUTH	Atlanta, Ga.					5.475 *A8*			5.125 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$77.50 *T2*	$96.00 *T2*			5.275 *T2, R3,C16*	7.75 *T2*		4.925 *T2, R3,C16*		7.325 *T2*			
	Houston, Lone Star, Texas		$101.00 *S2*	$119.00 *S2*		5.375 *S2*	7.85 *S2*						8.35 *S2*	

(Effective Nov. 22, 1957)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE
		Hot rolled 18 ga. & hvyr.	Cold rolled	Galvanized	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.			Cokes* 1.25-lb. base box	Electro* 0.25 lb. base box	Holloware Enameling 29 ga.
EAST	Bethlehem, Pa.													
	Buffalo, N. Y.	4.925 *B3*	6.05 *B3*				7.275 *B3*	8.975 *B3*			6.15 *W6*	† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb. 0.25 lb. add 65¢.		
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.	4.975 *A2*	6.10 *A2*				7.325 *A2*							
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.										6.15 *B3*			
	Fairless, Pa.	4.975 *U1*	6.10 *U1*				7.325 *U1*	9.025 *U1*				$10.15 *U1*	$8.85 *U1*	
	New Haven, Conn.													
	Phoenixville, Pa.													
	Sparrows Pt., Md.	4.925 *B3*	6.05 *B3*	6.60 *B3*			7.275 *B3*	8.975 *B3*	9.725 *B3*		6.25 *B3*	$10.15 *B3*	$8.85 *B3*	
	Worcester, Mass.										6.45 *A5*			
	Trenton, N. J.													
MIDDLE WEST	Alton, Ill.										6.35 *L1*			
	Ashland, Ky.	4.925 *A7*		6.60 *A7*	6.625 *A7*									
	Canton-Massillon, Dover, Ohio			6.60 *R3, R1*										
	Chicago, Joliet, Ill.	4.925 *W8, A1*					7.275 *U1*				6.15 *A5, R3,W8, N4, K2*			
	Sterling, Ill.										6.25 *N4, K2*			
	Cleveland, Ohio	4.925 *R3, J3*	6.05 *R3, J3*		6.625 *R3*		7.275 *R3, J3*	8.975 *R3, J3*			6.15 *A5*			
	Detroit, Mich.	5.025 *G3, M2*	6.15 *G3* 6.05 *M2*				7.375 *G3*	9.075 *G3*						
	Newport, Ky.	4.925 *A1*	6.05 *A1*											
	Gary, Ind. Harbor, Indiana	4.925 *U1, I3,Y1*	6.05 *U1, I3,Y1*	6.60 *U1, I3*	6.625 *U1, I3,Y1*	7.00 *U1*	7.275 *U1, Y1,I3*	8.975 *U1, Y1*			6.15 *Y1*	$10.05 *U1, Y1*	$8.75 *I3, U1,Y1*	7.50 *U1, Y1*
	Granite City, Ill.	5.125 *G2*	6.25 *G2*	6.80 *G2*	6.825 *G2*								$8.85 *G2*	7.60 *G2*
	Kokomo, Ind.			6.70 *C9*							6.25 *C9*			
	Mansfield, Ohio		6.05 *E2*			7.00 *E2*								
	Middletown, Ohio		6.05 *A7*	6.60 *A7*	6.625 *A7*	7.00 *A7*								
	Niles, Warren, Ohio Sharon, Pa.	4.925 *R3, N3,S1*	6.05 *R3*	6.60 *R3*	6.625 *N3, S1*	7.00 *N3, S1,R3*	7.275 *R3*	8.975 *S1, R3*					$8.75 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Donora, Pa. Aliquippa, Pa.	4.925 *U1, J3,P6*	6.05 *U1, J3,P6*	6.60 *U1, J3*	6.625 *U1*		7.275 *U1, J3*	8.975 *U1, J3*	9.725 *U1*		6.15 *A5, J3,P6*	$10.05 *U1, J3*	$8.75 *U1, J3*	7.50 *U1, J3*
	Portsmouth, Ohio	4.925 *P7*	6.05 *P7*								6.15 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	4.925 *W3, W5*	6.05 *W3, F3,W5*	6.60 *W3, W5*		7.00 *W3, W5*	7.275 *W3*	8.975 *W3*				$10.05 *W3, W5*	$8.75 *W3, W5*	7.50 *W5*
	Youngstown, Ohio	4.925 *U1, Y1*	6.05 *Y1*		6.625 *Y1*		7.275 *Y1*	8.975 *Y1*			6.15 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.30 *K1*				8.175 *K1*	10.275 *K1*				$10.80 *K1*	$9.50 *K1*	
	Geneva, Utah	5.025 *C7*												
	Kansas City, Mo.										6.40 *S2*			
	Los Angeles, Torrance, Cal.										6.95 *B2*			
	Minnequa, Colo.										6.40 *C6*			
	San Francisco, Niles, Pittsburgh, Cal.	5.625 *C7*	7.00 *C7*	7.35 *C7*							6.95 *C7*	$10.80 *C7*	$9.50 *C7*	
	Seattle, Wash.													
SOUTH	Atlanta, Ga.													
	Fairfield, Ala. Alabama City, Ala.	4.925 *T2, R3*	6.05 *T2, R3*	6.60 *T2, R3*							6.15 *T2, R3*	$10.15 *T2*	$8.85 *T2*	
	Houston, Tex.										6.40 *S2*			

(Effective Nov. 22, 1957)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfrs'. Bright
	Bethlehem, Pa.				6.475 *B3*	8.775 *B3*	7.925 *B3*					
	Buffalo, N. Y.	5.425 *R3,B3*	5.425 *R3,B3*	7.35 *B5*	6.475 *B3,R3*	8.775 *B3,B5*	7.925 *B3*	5.10 *B3*		7.20 *B3*		7.65 *W6*
	Claymont, Del.							5.10 *C4*		7.20 *C4*	7.625 *C4*	
	Coatesville, Pa.							5.10 *L4*		7.20 *L4*	7.925 *L4*	
	Conshohocken, Pa.							5.20 *A2*	6.175 *A2*	7.20 *A2*	7.625 *A2*	
	Harrisburg, Pa.							5.80 *P2*	6.275 *P2*			
	Milton, Pa.	5.575 *M7*	5.575 *M7*									
	Hartford, Conn.			7.80 *R3*		9.075 *R3*	7.925 *B3*					
	Johnstown, Pa.	5.425 *B3*	5.425 *B3*		6.475 *B3*			5.10 *B3*		7.20 *B3*	7.625 *B3*	7.65 *B3*
	Fairless, Pa.	5.575 *U1*	5.575 *U1*		6.625 *U1*							
	Newark, N. J. Camden, N. J.			7.75 *W10* 7.75 *P10*		8.95 *W10* 8.95 *P10*						
	Bridgeport, Conn. Putnam, Conn. Willimantic, Conn.	5.65 *N8*	5.65 *N8*	7.65 *N8* 7.85 *W10* 7.80 *J3*	6.55 *N8*	8.925 *N8*						
	Sparrows Pt., Md.		5.425 *B3*					5.10 *B3*		7.20 *B3*	7.625 *B3*	7.75 *B3*
	Palmer, Worcester, Readville, Mass. Mansfield, Mass.			7.85 *B5,C14*		9.075 *A5,B5*						7.95 *A5, W6*
	Spring City, Pa.			7.75 *K4*		8.95 *K4*						
MIDDLE WEST	Alton, Ill.	5.625 *L1*										7.85 *L1*
	Ashland,Newport,Ky.							5.10 *A7,A1*		7.20 *A1*		
	Canton, Massillon, Ohio			7.30 *R3,R2*	6.475 *R3,T5*	8.775 *R3,R2, T5*						
	Chicago, Joliet, Waukegan, Ill. Harvey, Ill.	5.425 *U1,R3, W8,N4,P13*	5.425 *U1,R3, N4,P13*	7.30 *A5, W10,W8 B5,L2,N9*	6.475 *U1,R3, W8*	8.775 *A5, W10,W8 L2,N8,B5*	7.925 *U1,W8*	5.10 *U1,A1, W8,I3*	6.175 *U1*	7.20 *U1,W8*	7.625 *U1,W8*	7.65 *A5,R3, W8,N4, K2,W7*
	Cleveland, Ohio	5.425 *R3*	5.425 *R3*	7.30 *A5,C13*		8.775 *A5, C13*	7.925 *R3*	5.20 *R3,J3*	6.175 *J3*		7.625 *R3, J3*	7.65 *A5, C13*
	Detroit, Mich.	5.525 *G3*	5.775 *G3*	7.30 *P5* 7.50 *P8,B5*	6.475 *R5* 6.575 *G3*	8.775 *R5* 8.975 *B5,P3, P8*	8.025 *G3*	5.20 *G3*		7.35 *G3*		
	Duluth, Minn.											7.65 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.425 *U1,I3, Y1*	5.425 *U1,I3, Y1*	7.30 *R3,J3*	6.475 *U1,I3, Y1*	8.775 *R3,M4*	7.925 *U1, Y1*	5.10 *U1,I3, Y1*	6.175 *J3,I3*	7.20 *U1,Y1*	7.625 *U1, Y1,I3*	7.75 *M4*
	Granite City, Ill.							5.30 *G2*				
	Kokomo, Ind											7.75 *C9*
	Sterling, Ill.	5.525 *N4*	5.525 *N4*					5.10 *N4*				7.75 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.30 *C10*	6.475 *C10,S1*	8.775 *C10*	7.925 *S1*	5.10 *R3,S1*		7.20 *S1*	7.625 *R3, S1*	
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.425 *U1,J3*	5.425 *U1,J3*	7.30 *A5,B4, R3,J3,C11, W10,S9,C8*	6.475 *U1,J3, C11,B7*	8.775 *A5, W10,R3,S9, C11,C8*	7.925 *U1,J3*	5.10 *U1,J3*	6.175 *U1*	7.20 *U1,J3, B7*	7.625 *U1,J3, B7*	7.65 *A5, J3,P6*
	Portsmouth, Ohio											7.65 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.10 *W5*				
	Youngstown, Ohio	5.425 *U1,R3, Y1*	5.425 *U1,R3, Y1*	7.30 *A5,Y1, F2*	6.475 *U1,Y1*	8.775 *Y1,F2*	7.925 *U1,Y1*	5.10 *U1,R3, Y1*		7.20 *Y1*	7.625 *U1, R3,Y1*	7.65 *Y1*
WEST	Emeryville, Cal. Fontana, Cal.	6.175 *J5* 6.125 *K1*	6.175 *J5* 6.125 *K1*		7.525 *K1*		8.625 *K1*	5.90 *K1*		8.00 *K1*	8.425 *K1*	
	Geneva, Utah							5.10 *C7*			7.625 *C7*	
	Kansas City, Mo.	5.675 *S2*	5.675 *S2*		6.725 *S2*		8.175 *S2*					7.90 *S2*
	Los Angeles, Torrance, Cal.	6.125 *C7,B2*	6.125 *C7,B2*	8.75 *R3,P14*	7.525 *B2*	10.65 *P14*	8.625 *B2*					8.60 *B2*
	Minnequa, Colo.	5.875 *C6*	5.875 *C6*					5.95 *C6*				7.90 *C6*
	Portland, Ore.	6.175 *O2*	6.175 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.125 *C7* 6.175 *B2*	6.125 *C7* 6.175 *B2*				8.675 *B2*					8.60 *C7,C6*
	Seattle Wash.	6.175 *B2,N6*	6.175 *B2*				8.675 *B2*	6.00 *B2*		8.10 *B2*	8.525 *B2*	
SOUTH	Atlanta, Ga.	5.625 *A8*	5.625 *A8*									7.85 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	5.425 *T2,R3, C16*	5.425 *T2,R3, C16,S11*	7.90 *C16*			7.925 *T2*	5.10 *T2,R3*			7.625 *T2*	7.65 *T2,R3*
	Houston, Ft. Worth, Lone Star, Tex.	5.675 *S2*	5.675 *S2*		6.725 *S2*		8.175 *S2*	5.20 *S2* 5.45 *L3*		7.30 *S2*	7.725 *S2*	7.90 *S2*

(Effective Nov. 22, 1957)

† Merchant Quality—Special Quality 35¢ higher.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire Spencer Steel Div., Buffalo, N. Y.
B7 A. M. Byers, Pittsburgh

C1 Caltrop Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C17 Chester Blast Furnace, Inc., Chester, Pa.

D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Northeastern Steel Corp., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 J. & L. Steel Co., Stainless Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	⅛ In.		¼ In.		1 In.		1¼ In.		1½ In.		2 In.		2½ 3 In.		2 In.		2½ In.		3 In.		3½ 4 In.	
STANDARD T & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Youngstown *R3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Fontana *K1*	+8.25	+23.5	+5.25	+19.5	+1.75	+15.00	0.75	+14.25	1.25	+13.25	1.75	+12.75	3.25	+13.00								
Pittsburgh *J3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Alton, Ill. *J1*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Sharon *M3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Fairless *N2*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Pittsburgh *N1*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Wheeling *W5*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Wheatland *W4*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Youngstown *Y1*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Indiana Harbor *Y1*	4.25	+11.0	7.25	+7.0	10.75	+2.50	13.25	+1.75	13.25	+0.75	14.25	+0.25	15.75	+1.00								
Lorain *N2*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Youngstown *R3*	9.75	+1.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Fairless *N2*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Fontana *K1*	+3.75		0.25		3.25		3.75		4.25		4.75		5.25									
Pittsburgh *J3*	9.75	+1.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Alton, Ill. *J1*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Sharon *M3*	9.75	+1.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Pittsburgh *N1*	9.75	+1.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Wheeling *W5*	9.75	+1.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Wheatland *W4*	9.75	+1.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Youngstown *Y1*	9.75	+1.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Indiana Harbor *Y1*	8.75	+5.0	12.75	+1.0	15.75	3.50	16.25	2.25	16.75	3.25	17.25	3.75	17.75	2.50								
Lorain *N2*	9.75	+1.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50

Threads only, buttweld and seamless 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ⅛, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 10¢ per lb.

(Effective Nov. 22, 1957)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.74	T-1
18	4	1	—	5	2.445	T-4
18	4	2	—	—	1.905	T-2
1.5	4	1.5	8	—	1.10	M-1
6	4	3	6	—	1.49	M-3
6	4	2	5	—	1.245	M-2
High-carbon chromium					.925	D-3, D-5
Oil hardened manganese					.475	O-2
Special carbon					.36	W-1
Extra carbon					.36	W-1
Regular carbon					.305	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

		Plate (*A3, J2, L4, C4*)			Sheet (*I2*)
	Cladding	10 pct	15 pct	20 pct	20 pct
Stainless Type	302				37.50
	304	37.95	42.25	46.70	40.00
	316	44.40	49.50	54.50	58.75
	321	40.05	44.60	49.30	47.25
	347	42.40	47.55	52.80	57.00
	405	29.85	33.35	36.85	.....
	410	29.55	33.10	36.70	.....
	430	29.80	33.55	37.25	.....

CR Strip (S8): Copper, 10 pct, 2 sides, 40.25; 1 side, 33.95.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.525	6.50	6.975				
Cleveland *R8*							14.75
So. Chicago *R8*				9.75			
Ensley *T2*	5.525	6.50					
Fairfield *T2*		6.50		9.75		6.60	
Gary *U1*	5.525					6.60	
Huntington *C16*		6.50					
Ind. Harbor *I8*	5.525		6.975	9.75		6.60	
Ind. Harbor *Y1*				9.75			
Johnstown *B8*		6.50					
Joliet *U1*			5.975				
Kansas City *S2*				9.75			14.75
Lackawanna *B8*	5.525	6.50	6.975			6.60	
Lebanon *B8*			6.975		14.50		14.75
Minnequa *C6*	5.525	7.00	6.975	9.75		6.60	14.75
Pittsburgh *P8*							14.75
Pittsburgh *J8*				9.75			
Seattle *B2*				10.25		6.75	15.75
Steelton *B8*	5.525		6.975			6.60	
Struthers *Y1*				9.75			
Torrance *C7*						6.75	
Williamsport *S8*		6.50					
Youngstown *R8*				9.75			

COKE

Furnace, beehive (f.o.b.) Connellsville, Pa.	Net-Ton $15.00 to $15.75
Foundry, beehive (f.o.b.)	$17.50 to $19.00
Foundry oven coke	
Buffalo, del'd	$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville Is., Pa.	29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1957 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field		9.625	
Armature	11.10	10.85	11.35
Elect.	11.80	11.55	12.05
Hermetic		12.10	
Motor	12.90	12.65	13.15
Dynamo	13.95	13.70	14.20
Trans. 72	15.00	14.75	15.25
Trans. 65	15.55		
		Grain Oriented	
Trans. 58	16.05	Trans. 80	19.20
Trans. 52	17.10	Trans. 73	19.70

Producing points: Beech Bottom (*W5*); Brackenridge (*A8*); Granite City (*G2*); Indiana Harbor (*I8*); Mansfield (*E2*); Newport, Ky. (*A8*); Niles, O. (*A8*); Vandergrift (*U1*); Warren, O. (*R8*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	26.00	40	100, 110	10.70
20	72	25.25	35	110	10.70
18	72	25.75	30	110	10.85
14	72	25.75	24	72 to 84	11.25
12	72	26.25	20	90	11.00
10	60	28.00	17	72	11.40
10	48	28.50	14	72	11.85
7	60	28.25	12	60	12.95
6	60	31.50	10	60	13.00
4	40	35.00	8	60	13.30
3	40	37.00			
2½	30	39.25			
2	24	60.75			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00)	$135.00
No. 1 Ohio	120.00
See. Quality, Pa., Md., Ky., Mo., Ill.	120.00
No. 2 Ohio	103.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $2.00)	21.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$150.00
Childs, Hays, Pa.	155.00
Chicago District	160.00
Western Utah	175.00
California	180.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	157.00-160.00
Silica cement, net ton, bulk, Latrobe	28.50
Silica cement, net ton, bulk, Chicago	25.50
Silica cement, net ton, bulk, Ensley, Ala.	26.50
Silica cement, net ton, bulk, Mt. Union	24.50
Silica cement, net ton, bulk, Utah and Calif.	37.00

Chrome Brick *Per net ton*

Standard chemically bonded, Balt	$105.00
Standard chemically bonded, Curtiner, Calif.	115.00
Burned, Balt.	99.00

Magnesite Brick

Standard Baltimore	$131.00
Chemically bonded, Baltimore	116.00

Grain Magnesite St. ¾ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite *Per net ton*

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	$16.75
Midwest	17.00
Missouri Valley	15.00

(Effective Nov. 22, 1957)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢ lb.	Merch. Wire Galv. ¢ lb.
Alabama City *R8*	173	187		212	193	8.65	9.20
Aliquippa *J5***	173	190			190	8.65	9.325
Atlanta *A8***	175	192		214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	8.75	9.425**
Buffalo *W6*						8.65	8.95*
Chicago *N4****							....*
Cleveland *A6*							....*
Cleveland *A5*						8.65	....*
Crawf'dav. *M4****	175	192		214	198	8.75	9.425
Donora, Pa. *A5*	173	187		212	193	8.65	9.20
Duluth *A5*	173	187		212	193	8.65	9.20
Fairfield, Ala. *T2*	173	187		212	193	8.65	9.20
Galveston *D4*	9.10‡						....*
Houston *S2*	178	192		217	198	8.90	9.45
Jacksonville *M4*	184 ‡	197		219	203	9.00	9.675
Johnstown *B8****	173	190	172		196**	8.65	9.325**
Joliet, Ill. *A5*	173	187		212	193	8.65	9.20
Kokomo *C9**	175	189		214	195*	8.75	9.30*
L. Angeles *B2****						9.60	10.275
Kansas City *S2**	178	192		217	198*	8.90	9.45*
Minnequa *C6*	178	192	177	217	198‡	8.90	9.45‡
Monessen *P6*					193	8.65	9.20
Palmer, Mass. *W6*						8.95	9.50*
Pittsburg, Cal. *C7*	192	210			213	9.60	10.15
Rankin, Pa. *A5*	173	187			193	8.65	9.20
So. Chicago *R8*	173	187			193	8.65	9.20
S. San Fran. *C6*				236		9.60	10.15‡
SparrowsPt. *B4****	175			214	198	8.75	9.425
Struthers, O. *Y1**						8.65	9.30
Worcester *A5*	179					8.95	9.50
Williamsport *S8*							....*

* Zinc less than .10¢.
** 11-12¢ zinc.
*** 10¢ zinc.
‡ Plus zinc extras.
† Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*		10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70		
Detroit *D1*	9.05	10.50	12.70	15.70	
Detroit *D2*	9.05	10.50	12.70		
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60		
Franklin Park, Ill. *T8*	9.05	10.25	12.45	15.45	18.40
Harrison, N. J. *C11*			12.90	16.10	19.30
Indianapolis *J3*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Pittsburgh *S7*	8.95	10.40	12.60	15.60	18.55
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*		10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *J3*	8.95	10.40	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	36.34	42.56	35.22
	2½	12	48.94	57.31	47.43
	3	12	56.51	66.18	54.77
	3½	11	65.97	77.25	63.93
	4	10	87.61	102.59	85.53
National Tube	2	13	36.34	42.56	35.22
	2½	12	48.94	57.31	47.43
	3	12	56.51	66.18	54.77
	3½	11	65.97	77.25	63.93
	4	10	87.61	102.59	85.53
Pittsburgh Steel	2	13	36.34	42.56	.....
	2½	12	48.94	57.31	.....
	3	12	56.51	66.18	.....
	3½	11	65.97	77.25	.....
	4	10	87.61	102.59	.....

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Machine and Carriage Bolts	Full Container Price	30 Containers	20,000 Lb.	40,000 Lb.
½" and smaller x 6" and shorter	49	54	56	57
⅝" thru 1" x longer than 6"	35	40	43	45
Rolled thread carriage bolts ½" & smaller x 6" and shorter	49	54	56	57
Lag, all diam. x 6" & shorter	49	54	56	57
Lag, all diam. longer than 6 in.	39	44½	47	48½
Plow bolts, ½" and smaller x 6" and shorter	49	54	56	57

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
¾ in. or smaller	60½
⅞ in. to 1 in. inclusive	55½
1⅛ in. to 1½ in. inclusive	58½
1⅝ in. and larger	53½
C. P. Hex, reg. & hvy.	
¾ in. and smaller	60½
⅞ in. to 1½ in. inclusive	55½
1⅝ in. and larger	53½
Hot Galv. Hex Nuts (All Types)	
¾ in. and smaller	46½
Semi-finished Hex Nuts	
⅝ in. or smaller	60½
¾ in. to 1½ in. inclusive	55½
1⅝ in. and larger	53½

(Add 25 pct for broken case or keg quantities)

Finished

⅝ in. and smaller 63

Rivets

Base per 100 lb

½ in. and larger $12.25

Pct. Off List

7/16 in. and smaller 19

Cap Screws

Discount (Packages)

	Full Finished H. C. Heat Treat	C-1018 Steel Full-Finished Cartons Bulk
New std. hex head, packaged		
¼" diam. and smaller x 6" and shorter	40	26
⅜", ½", and 1" diam. x 6" and shorter	22	3
⅝" diam. and smaller x longer than 6"	8	+13
¾", ⅞", and 1" diam. x longer than 6"	+ 6	+32
¼" through ⅝" dia. x 6" and shorter	58	49
¾" through 1" dia. x 6" and shorter	45	33

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

Plain Finish	Quantity	Discount Mach. Screws	Stove Bolts
Cartons		19	32
Bulk			
To ¾" diam. incl.	25,000-200,000	9	54
5/16 to ½" diam. incl.	25,000-200,000	9	54
All diam. over 3" long	5,000-100,000	—	54

Machine Screws & Stove Bolt Nuts

	Quantity	Discount Hex	Square
In Cartons		16	19
In Bulk			
⅜" diam. & smaller	15,000-100,000	7	9

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.7
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 3 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	43.50
Electrodeposited	33.25
Brass, 80-20, ball anodes, 2000 lb or more	44.00
Zinc, ball anodes, 2000 lb lots	16.50
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carbon, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.70
Tin, ball anodes and elliptical $1.13 per lb.	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	74.70
Copper sulphate, 100 lb bags, per cwt.	24.35
Nickel salts, single, 100 lb bags	40.50
Nickel chloride, freight allowed, 300 lb	48.50
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	23.05
(Philadelphia price 23.10)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	48.00
Chromic acid, flake type, 10,000 lb or more	31.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots for minus 100 mesh

Swedish sponge iron, del. East of Miss. River, ocean bags, 23,000 lb. and over	10.5¢
F.O.B. Riverton or Camden, New Jersey, freight allowed west of Miss. River	9.5¢
Domestic sponge iron, 98+% Fe, 23,000 lb. and over del'd East of Miss. River	10.5¢
F.O.B. Riverton, New Jersey, West of Miss. River	9.5¢
Canadian sponge iron, del'd in East, carloads	12.5¢
Electrolytic iron, annealed, imported 99.5+% Fe	27.5¢
domestic 99.5+% Fe	36.5¢
Electrolytic iron, unannealed minus 325 mesh, 99+% Fe	57.0¢
Electrolytic iron melting stock, 99.84% pure	27.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+% Fe	88.0¢ to $2.85
Aluminum, freight allowed	38.00¢
Brass, 10 ton lots	31.1¢ to 47.1¢
Copper, electrolytic	41.50¢
Copper, reduced	40.3¢ to 48.8¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99.85% min. Fe. 03 max. Del'd	$5.00
Lead	21.50¢ lb, f.o.b. plant
Manganese f.o.b. Extron, Pa.	46.0¢
Molybdenum, 99%	$3.60 to $3.95
Nickel, chemically precipitated	$1.05
Nickel, unannealed	$1.00
Nickel, annealed	$1.06
Nickel, spherical, unannealed -80	$1.13
Silicon	43.50¢
Solder powder	13¢ plus met. value
Stainless steel, 302	$1.02
Stainless steel, 316	$1.30
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh)	$3.75 (nominal)
Zinc, 5000 lb & over	17.5¢ to 30.7¢

WARE-HOUSES

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.64	8.97	9.05	9.01	10.68				
Baltimore	$.10	8.38	8.98	9.71	8.86	8.76	9.29	9.16	11.44*	16.18	15.18	19.73	18.98
Birmingham	.15	8.18	9.45	10.15	8.23	8.56	8.64	8.60	10.57				
Boston	.10	9.48	10.54	11.55	9.52	9.82	9.73	9.83	13.00	15.79	15.38	19.89	19.18
Buffalo	.15	8.40	9.15	11.22	8.65	9.05	9.05	8.95	11.05*	16.34	15.15	19.01	18.95
Chicago	.15	8.35	9.60	10.15	8.38	8.71	8.79	8.75	8.95	15.80	14.80	19.35	18.60
Cincinnati	.15	8.49	9.65	10.20	8.69	9.08	9.33	9.07	9.46	15.61	15.11	18.96	18.91
Cleveland	.15	8.33	9.60	10.10	8.48	8.94	9.16	8.84	10.95*	15.89	14.89	19.44	18.96
Denver	.20	9.70	11.30	12.49	9.80	9.70	9.80	9.98	10.65				17.60
Detroit	.15	8.58	9.85	10.50	8.73	9.06	9.33	9.05	9.30	15.46	15.06	18.81	18.86
Houston		8.45	9.75		8.60	9.05	8.60	8.55	11.10	16.20		19.30	19.05
Kansas City	.20	9.02	10.27	10.07	9.05	9.38	9.46	9.42	9.87	20.02	15.47	20.02	19.27
Los Angeles	.10	10.70	10.85	11.75	9.65	9.65	9.20	9.80	12.60	17.05	16.10	21.05	20.35
Memphis	.15	8.02	9.22		8.12	8.35	8.39	8.25	9.85				
Milwaukee	.15	8.48	9.73	10.28	8.51	8.84	9.00	8.88	9.18	15.43	14.93	18.78	18.73
New York	.10	8.97	10.23	10.66	9.41	9.53	9.45	9.67	12.86*	15.02	15.19	18.42	18.99
Norfolk	.20	8.00			8.40	8.35	8.70	8.45	10.70				
Philadelphia	.10	8.10	9.00	9.97	8.79	8.87	8.60	8.75	11.61*	15.61	15.11	18.96	18.91
Pittsburgh	.15	8.33	9.60	10.50	8.48	8.71	8.79	8.75	10.95*	15.80	14.80	19.35	18.60
Portland		8.50	11.20	11.55	9.05	8.30†	8.65	8.65	14.50	18.50	16.10	20.75	20.25
San Francisco	.10	9.45	10.85	11.10	9.55	9.70	9.60	9.80	13.10	17.05	16.10	21.05	20.35
Seattle		9.95	11.15	12.00	10.00	9.70	9.80	10.80	14.05	16.55	16.35	20.65	20.15
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.20		17.35	21.55	21.05
St. Louis	.15	8.69	9.94	10.51	8.74	9.08	9.25	9.12	9.56	15.66	15.16	19.01	18.96
St. Paul	.15	8.94	10.19	10.76	8.99	9.45	9.53	9.37	9.81		15.26		19.06

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other or with galvanized sheets for quantity.

†† 10¢ zinc. ‡ Deduct for country delivery. † 3/16 in. to ½ in. * C1018—1 in. rounds.

(Effective Nov. 22, 1957)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	
Birmingham *R3*	62.00	62.50*			
Birmingham *W9*	62.00	62.50*	66.50		
Birmingham *U4*	62.00	62.50*	66.50		
Buffalo *R3*	66.00	66.50	67.00	67.50	
Buffalo *H1*	66.00	66.50	67.00	67.50	
Buffalo *W6*	66.00	66.50	67.00	67.50	
Chester *P2*	66.50	67.00	67.50		
Chicago *I4*	66.00	66.50	66.50	67.00	
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50		
Fontana *K1*	75.00	75.50			
Geneva, Utah *C7*	66.00	66.50			
Granite City *G2*	67.90	68.40	68.90		
Hubbard *Y1*			66.50		
Ironton, Utah *C7*	66.00	66.50			
Midland *C11*	66.00				
Minnequa *C6*	68.00	68.50	69.00		
Monessen *P6*	66.00				
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*		66.50	67.00	67.50	
Sharpsville *S3*	66.00	66.50	66.50	67.00	
So. Chicago *R3*	66.00	66.50	66.50		
So. Chicago *W8*	66.00		66.50	67.00	
Swedeland *A2*	68.00	68.50	69.00	69.50	
Toledo *I4*	66.00	66.50	66.50	67.00	
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	74.00
Youngstown *Y1*			66.50	67.00	

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1, I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Beasemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	27.00	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	32.00	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	37.75	33.75	34.25	34.25
Plates	44.25	45.00	46.25	47.25	50.00	50.75	76.75	59.75	69.75	40.25	35.00	36.75	36.00
Sheets	48.50	49.25	51.25	52.00	—	55.50	81.50	65.50	79.25	48.25	40.25	—	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	—	55.50	81.50	65.50	79.25	48.25	40.25	—	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50 52.75	61.50	35.75	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2,* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2.*

Strip. Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2,* Washington, Pa., *W2;* W. Leechburg, Pa., *A4;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton-Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *J3,* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (plus further conversion extras); *W1;* New Bedford, Mass. (.25¢ per lb higher), *R6;* Gary, *U1* (.25¢ per lb higher).

Bar: Baltimore, *A7,* S. Duquesne, Pa., *U1,* Munhall, Pa., *U1,* Reading, Pa., *C2,* Titusville, Pa., *U2,* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A5;* Massillon, O., *R5,* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A5;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4,* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A5;* Monessen *P1;* Syracuse, *C11;* Bridgeville, *U2.*
Structurals: Baltimore, *A7;* Massillon, O., *R5;* Chicago, Ill., *J4;* Watervliet, N. Y., *A5;* Syracuse *C11;* S. Chicago, *U1.*

Plates: Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

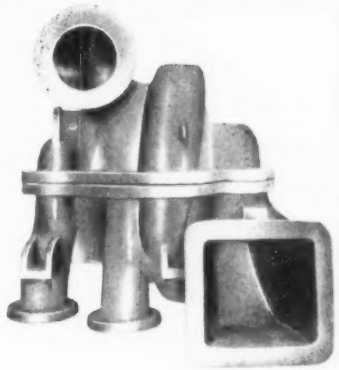
Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R5;* Watervliet, *A5;* Pittsburgh, Chicago, *U1,* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1.*

(Effective Nov. 22, 1957)

KUTZTOWN *Skill*

creates a Freon Compressor Casing

Specifications for this casting required that it be absolutely pressure tight. All inside surfaces had to be completely smooth and free of sand. Cast in two sections: top and base.



Overall Width
4 by 5 feet

Overall Height
4 feet

Approximate Weight
per pair—8,000 lbs.

Cast to ASTM A-48, Class 35 Specifications.

Not infrequently Kutztown craftsmen are asked to mold castings of unusual size, or unusual shape, or to unusual specifications. And not infrequently "all three" requirements are coupled in one job! We invite you to write for information.

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Drop forged from the best mild steel, heat treated to increased tensile strength and proof-tested to 50% beyond rated "safe working load," ARMSTRONG Eye Bolts are strong, dependable and safe. Blank or threaded, "Plain or Shoulder" patterns. 15 standard sizes and special lengths. Write for Catalog.

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CHUCKING MACHINES
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FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd, 67-71% Cr, 30-1.00% max. Si.

0.02% C	41.00	0.50% C	38.00
0.05% C	39.00	1.00% C	37.75
0.10% C	38.50	1.50% C	37.50
0.20% C	38.25	2.00% C	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si ... 28.75
3.50-3.90% C, 57-64% Cr, 2.00-4.50% Si ... 27.50
0.025% C (Simplex) ... 36.75
8.00% max C, 50-55% Cr, 3-6% max Si 25.00
8.50% max C, 50-55% Cr, 3% max Si 25.00

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C	$1.31
0.50% max. C	1.31
2 to 11% C, 88-91% Cr, 0.75% Fe	1.49

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads	$1.29
Ton lots	1.31
Less ton lots	1.33

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.

Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads	27.50	14.20
Ton lots	32.75	15.65
Less ton lots	34.35	17.30

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-32% Ca, 60-65% Si, 3.00 max. Fe.

Carloads	25.65
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	24.25
Ton lots	26.15
Less ton lots	27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 3-5% Mn, 5-7% Zr, 2% Fe ½ in. x 12 mesh.

Ton lots	21.15
Less ton lots	22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. 2% Si, Vanadium Corp. of America, 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots	17.20
Ton lots	18.70
Less ton lots	19.25

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max 8% Si, Vanadium Corp. of America, 48 to 52% Ti 9 to 11% Ca, 6 to 7% C.

Carload packed	18.50
Ton lots to carload packed	19.65
Less ton lots	20.90

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O., Alloy, W. Va., Sheffield, Ala., Portland, Ore.	12.25
Johnstown, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or subtract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk	14.80
Ton lots packed	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen - removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn ... 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk	12.80
Ton lots, packed	14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet	15.10
Ton lots, packed, pallets	16.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots, packed	Carloads, packed
96.75% Si, 1.25% Fe	24.20	22.90
98% Si, 0.75% Fe	24.95	23.65

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk	7.70
Ton lots, packed	10.50

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si	13.00	75% Si	16.40
65% Si	15.25	85% Si	18.10
		90% Si	19.50

Ferrovanadium

50-55% V delivered, per pound, contained V, carloads, packed.

Openhearth	3.20
Crucible	3.30
High speed steel (Primos)	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.95	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads	10.65¢
Ton lots	11.80¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo ... $1.28

Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound contained Cb.

Ton lots	$4.90
Less ton lots	4.95

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Sb plus Ta ... $4.25

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo ... $1.68

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $4.00 unitage, per gross ton ... $90.00
10 tons to less carload ... $110.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... $1.50
Less ton lots ... $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton ... $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ... $2.60 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. ... $1.41
bags, f.o.b. Washington, Pa., Langeloth, Pa. ... $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 ... $1.38

Zirconium, per lb of alloy

35-40% f.o.b. freight allowed, carloads, packed	27.25¢
12-15%, del'd lump, bulk-carloads	9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload ... $5.50

Bortram, f.o.b. Niagara Falls.

Ton lots per pound	45¢
Less ton lots, per pound	50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots, F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up ... $1.20

10 to 14% B	.85
14 to 19%	1.20
19% min. B	1.50

Grainal, f.o.b. Bridgeville, Pa., freight, allowed, 100 lb and over

No. 1	$1.05
No. 79	50¢

Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots	$1.46
Less ton lots	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots ... 2.15

(Effective Nov. 22, 1957)

Z I N C

STRIP AND WIRE

ZINC METALLIZING WIRE

ZINC ACCURATELY ROLLED

for electric fuse elements

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Stops Losses making Dies and Templates

Popular package is 8-oz. can fitted with Bakelite cap holding soft-hair brush for applying right at bench; metal surface ready for layout in a few minutes. The dark blue background makes the scribed lines show up in sharp relief, prevents metal glare. Increases efficiency and accuracy.

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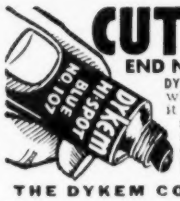

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END NIGHT CLEANUP & MORNING REBLUING

DYKEM HI-SPOT BLUE No. 107 is used to locate high spots when scraping bearing surfaces. As it does not dry, it remains in condition on work indefinitely, saving scraper's time. Intensely blue, smooth paste spreads thin, transfers clearly. No grit; noninjurious to metal. Uniform. Available in collapsible tubes of three sizes. Order from your supplier. Write for free sample tube on company letterhead.

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Christmas Seals make possible a year-round gift to every man, woman and child—help and protection against tuberculosis. From now 'til Christmas make every card, letter, and package a double gift—with Christmas Seals.

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THE IRON AGE

speed up your assembly!

FERRY CAP countr-bor SCREW

wrenches tighter ...wrenches faster!

External wrenching in socket head screw applications is becoming increasingly popular since the development of the new Countr-Bor screw by Ferry Cap. External wrenching permits quicker, tighter assembly. The solid, machined head provides a smoother, cleaner, flush surface.

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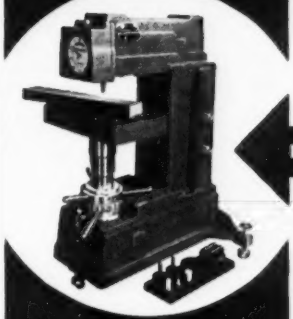

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Hundreds of installations over the past few years have proved the economy of the only hardness tester which combines all scales of Rockwell Test (15 to 150 kg. loads).

The Kentrall cuts costs because it does the job of two conventional testers, requires only half the space and maintenance. Write for more detailed information, plus a list of prominent users who have switched to Kentrall. TB148

PRICE $680.

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THE CLEARING HOUSE

West Coast Market Slow and Uneasy

Used machinery sales there mark time, at least until defense spending plans are spelled out.

Demand is sluggish without stimulation of brisk aircraft industry activity.

▪ Aircraft and missile industry cutbacks, stretchouts, and cancellations are hurting West Coast used machinery dealers. The story is the same in Los Angeles, San Francisco, and Seattle. Business is slow, and there's plenty of uncertainty about the future.

Southern California dealers say their customers are hesitant about buying. As one leading dealer puts it, "Business won't be too hot until the aircraft industry knows where it's heading. When it gets word from the Pentagon, customers will start planning. Then business should pick up."

Some Tools Move—Dealer inventories are fairly heavy. Many have cut down their buying sharply.

Some items, however, enjoy a good turnover. They are engine lathes, milling machines, and shears, brakes and punch presses.

In the San Francisco Bay Area reduced defense spending has slowed the used machinery business down. Shops that are in the market for equipment are holding off. They want to see what will become available because of Uncle Sam's economy action.

Buyers know that about 85 per cent of the equipment is government-owned. They still wonder if some of this might be turned loose when the government decides defense policies.

Demand Mixed — Demand is spotty. Presses, shears and press brakes are in strong demand. But they're hard to get, unless the equipment is antique. And even the older stuff is getting harder to sell. The machines that move are of post-war vintage. Such merchandise brings good prices.

Demand for foreign equipment continues fairly strong and prices are about equal to good used machinery.

Dealers frankly admit that foreign tool imports are offering them stiff competition.

Wait for Uncle—No one in the Bay Area complains about a loaded inventory situation. Radial drills, on the hot item list for many months, are neither in big demand nor supply.

Here's the typical outlook in the Bay Area: "When Uncle Sam decides how he's going to move, then business will pick up. Until then, everybody is just sitting tight."

Look to Boeing—At best, Seattle's used machinery industry could be described as slow. There isn't much demand; there isn't much inventory.

Here's why: used machinery dealers are waiting to see what will happen in Boeing Airplane Co.'s touch-and-go cutback situation.

Boeing's health in large measure sets the used machinery pace. The firm is Washington's largest metalworking employer. When the company slows its subcontracts, the used machinery business there slackens. When the company speeds up, subcontractor work becomes brisk and the market opens up again.

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AIR COMPRESSORS
450 cu. ft. Ingersoll Rand XRE, 8" x 8" & 3½" x 8" 100 lb. Pressures, 100 H. P. A. C. Syn. Motor
2700 cu. ft. Ingersoll Rand PRE2, 20" x 18" x 21" 100 lb. Pressures, 500 H.P. Syn. Motor

BENDING ROLLS
10' x 10" Ga. Bertsch Initial Type
10' x ½" King Pyramid Type
16' x ⅝" Ransome Pyramid Type
18' x 1" Niles Pyramid Type

BRAKE—PRESS TYPE
12' x ½" Cincinnati

CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton P&H	56' Span	220 3-60
5 ton Cleveland	60' Span	115 Volt D.C.
8 ton P&H	55' Span	220 3-60
10 ton Shepard Niles	58' Span	440 3-60
10 ton Shaw	120' Span	230 Volt D.C.
15 ton Shepard Niles	52' Span	230 Volt D.C.
15 ton Shepard Niles	55' Span	220/440 A.C.
15 ton Niles	75' Span	230-3-60
20 ton P&H	55' Span	220/440 A.C.
120 ton Shepard Niles	77' Span	220 3-60

DIEING MACHINE
150 ton Henry & Wright 5" Stroke, Roll Feed Scrap Cutter, 30 H.P. A.C. Motor

FORGING MACHINES
1" to 5" Acme, Ajax, National

FURNACE—MELTING
15 ton Heroult Top Charge, 12' Shell Complete with Transformers

HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING
800 lb. to 20,000 lb. incl.

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#2500 Manville Solid Die Single Stroke
#4 Waterbury Farrel DSDD Capy. ⅝" x 6"

LEVELLERS—ROLLER
18" Torrington, 15 Rolls 2⅝" dia.
37" Torrington, 19 Rolls 1 31/32", dia.
42" Bliss, Nine Rolls 4½" dia.
66" Aetna 17 Rolls 4⅝" dia.

PLANER
72" x 72" x 16' Detrick & Harvey Four Head

PRESSES—HYDRAULIC
250 ton AEGo Straightening 4 Column, 16" Stroke, 87" x 35" Between Columns, 16' Long Bed
500 ton HPM Fastraverse, Bed 36" x 36"
1500 ton Bliss 15" Stroke, Bed 49" x 48"
1500 ton Mesta Steam Hydr. Forging Press
2000 ton Bliss 18" Stroke Bed Area 54"x 55"
1500 Baldwin-Lima-Hamilton Hydr. Forging Press

PRESSES—STRAIGHT SIDE
180 ton Hamilton #847, 12" Str. 85½" Bet. Ups.
200 ton Clearing F1200-42, Stroke 30", Bed 44"x38"
250 ton Bliss #88 12" Str. Bed 29" x 29"
250 ton Bliss SI 7½" Str. Bistr. 33" x 39"

PRESSES—KNUCKLE JOINT
600 ton Clearing K-1600-36, 4" stroke, Bed 36"x36"
1500 ton Verson, 4" Stroke, Bed 48" x 48"

PUNCH & SHEAR COMBINATIONS
Cleveland Style EF, Arch Jaw Capy. 1¼" x 1"
Cleveland Style G Single End, 60" Throat
Cleveland Style W 60" Throat, Architectural Jaw
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8" x 10" Schmitz Single Stand Two High
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12" x 12" Single Stand Two High
12" x 16" Single Stand Two High
16" x 21" Single Stand Two High
20" x 36" Single Stand Two High

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72" Niles, 7 Rolls 9" Dia. Motor Driven

ROLL—ANGLE BENDING
4" x 4" x ⅝" Hercules

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No. 0A Medart 2 Roll, Capacity ⅛" to 1" Bars

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#6½A Fenn, Capacity 4½" Tube, 1¼" Solid, 16" Die Length Hydraulic Feed, LATE

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(2)—**600-HP Allis-Chalmers mill motors, 600-VDC, 300/600 R.P.M., with a 1200-KW, 600-VDC Westinghouse M-G Set, 1750-HP synchronous motor, 4160/2300-Volt, 3 phase, 60 cycle.**
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SPECIAL

1450 KW double armature Whse. Generator, 600 VDC, 900 R.P.M. separate excited fields, with 2250 HP, syn. motor, 2300/4000 volt, 3 phase, 60 cycle.

MOTOR GENERATOR SETS

Qu.	KW	Make	RPM	D.C. Volts	A.C. Volts
5	1500	Al. Ch.	514	350/700	13800/6900/4160
5	1500	G.E.	514	250	2300/4000
1	1450	Whse.	900	600	2300/4000
3	1250	Al. Ch.	720	600	2300/4000
1	850	G.E.	720	340/350	2300
1	725	Whse.	900	600	2300/4000
1	500	Cr. Wh.	720	600	2300/440
1	500	G.E.	900	250	2300
4	300	Whse.	1200	125/250	2300
1	300 (3-unit)	Al. Ch.	1200	250/300	2300
2	200	Whse.	1200	125/250	2300/440
2	150	Rel.	1200	125	2300/440
1	150	Whse.	1200	125/250	2300/440
1	150	G.E.	1200	250	4600/2300
1	100	Whse.	720	125/250	220
1	75	Whse.	1200	125/250	2300

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DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
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1	2250	Elliott		600	200/300
1	2200	G.E.	MCF	600	400/500
1	1750	Elliott		250	175/350
1	1375	G.E.	MCF	415	1300
1	1200	G.E.	MCF	600	450/600
1	940	Whse.	QM	250	140/170
3	800	G.E.	MCF	250	400/750
3	450	Whse.		550	415
2	300	G.E.	MPC	230	400
2	200	Whse.	CB-207 4	250	850/1200
1	125	Whse.	SK-190	230	450/1200
1	150	G.E.	CDBB	600	250/700
1	150	Cr. Wh.	65-H	230	1150
1	125	Whse.	SK-185	230	350/1050
2	100	Whse.	SK-181	230	450/1000
1	60/100	G.E.	RF-17	230	450/900
1	75	G.E.	CD-1231	230	850
2	75	Cr. Wh.	53HTEFV	230	860
1	50	G.E.	MD-412-AE	230	550
6	40	Rel.BB	385FTEFC	230	500/1500
1	30/40	Whse.D.P.	SK-131.5-BB	230	500/1500
3	(unused) 30	G.E.	CDM-85-BB	230	2200

MG SETS—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	DC Volts	AC Volts
1	350	G.E.	900	125	4160/2300/440
1	2000	G.E.	514	600	2300/4600
2	1750/2100	G.E.	514	250/300	2500/4600
3	1000	G.E.	720	600	6600/13200
1	750	G.E.	720	125/250	2300/4600
1	500	Whse.	900	125/250	440
1	500	G.E.	900	125/250	440/2300
2	300	G.E.	1200	250	2300
1	250	Whse.	1200	275	2300
1	200	El. Ma.	1200	250	2300/4600
1	200	Whse.	1200	550	2300
1	200	G.E.	1200	250	440

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltages
3	3333	Whse.	OISC	1	13800 x 2300
1	1500	G.E. auto	HT	3	4000/4200/4400
3	1000	G.E.	HVIDDI	1	2400 x 480
3	1000	G.E.	OA/FA	1	13800 x 230/460
2	750	G.E.	Pyranol	1	4800 x 83/55
3	500	Kuhl	OISC	1	12500 x 6600
3	500	Moloney	OISC	1	6600/11430Y x 2200/4000Y
1	225 Unused	Marcus	Auto-air	3	208/220
3	150	G.E.		1	23000 x 2300/4000Y
3	100	Whse.	OISC	1	4600/2300 x 460/230/115
3	100 Unused	G.E.	OISC	1	22900 x 2400/4160Y

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36" x 36" x 18' table Cincinnati Double Housing, m.d.
36" x 36" x 20' Cincinnati, 2 heads, belt
36" x 36" x 20' G. A. Gray Extra Heavy, belt, 2 heads on rail
36" widened to 42" x 36" x 20' Cincinnati, m.d., 2 rail heads, 1 side head
48" x 48" x 18' Niles-Bement-Pond, 2 heads, belt
48" x 48" x 18' Detrick & Harvey, 4 heads, reversing m.d.
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Each set equipped with a 40-KW exciter for synchronous motor fields, and a 10-KW exciter for generator fields, both 250-VDC at 514 RPM.
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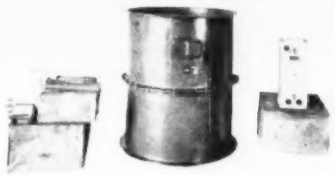

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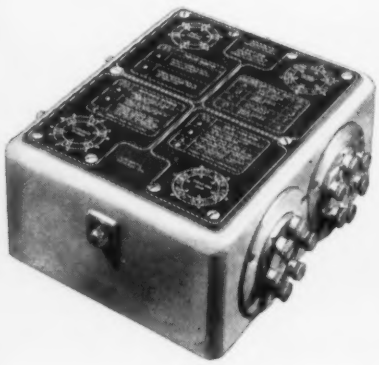

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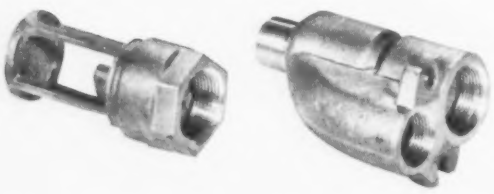

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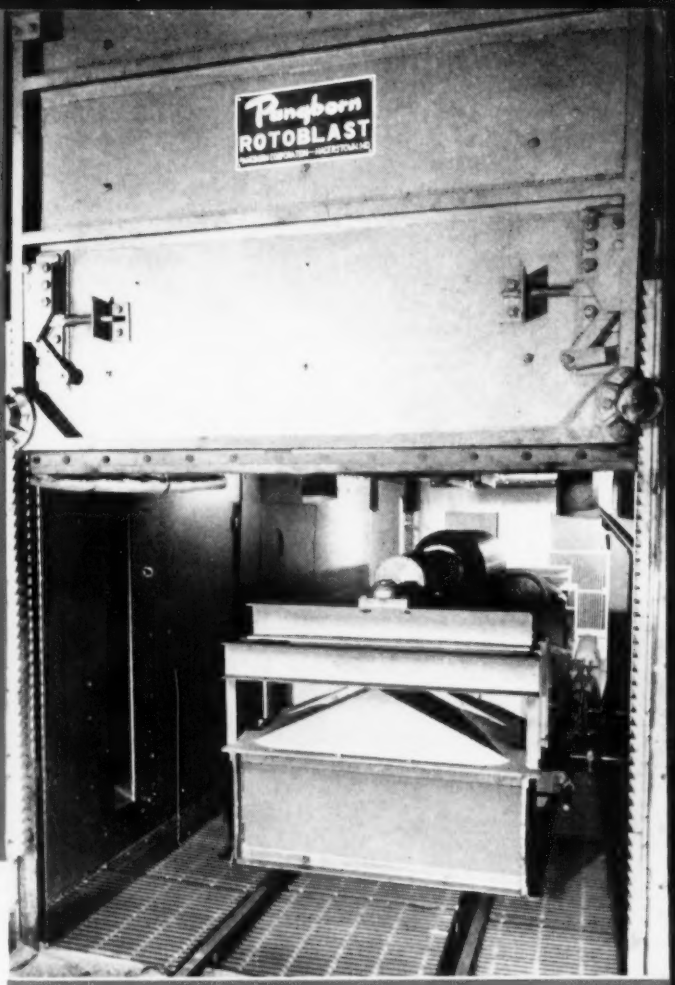

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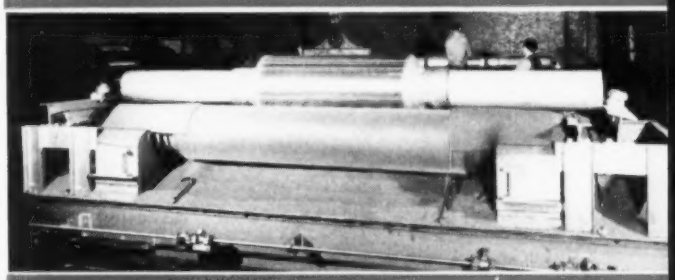

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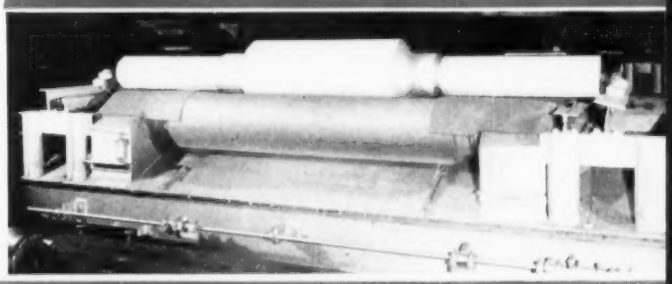

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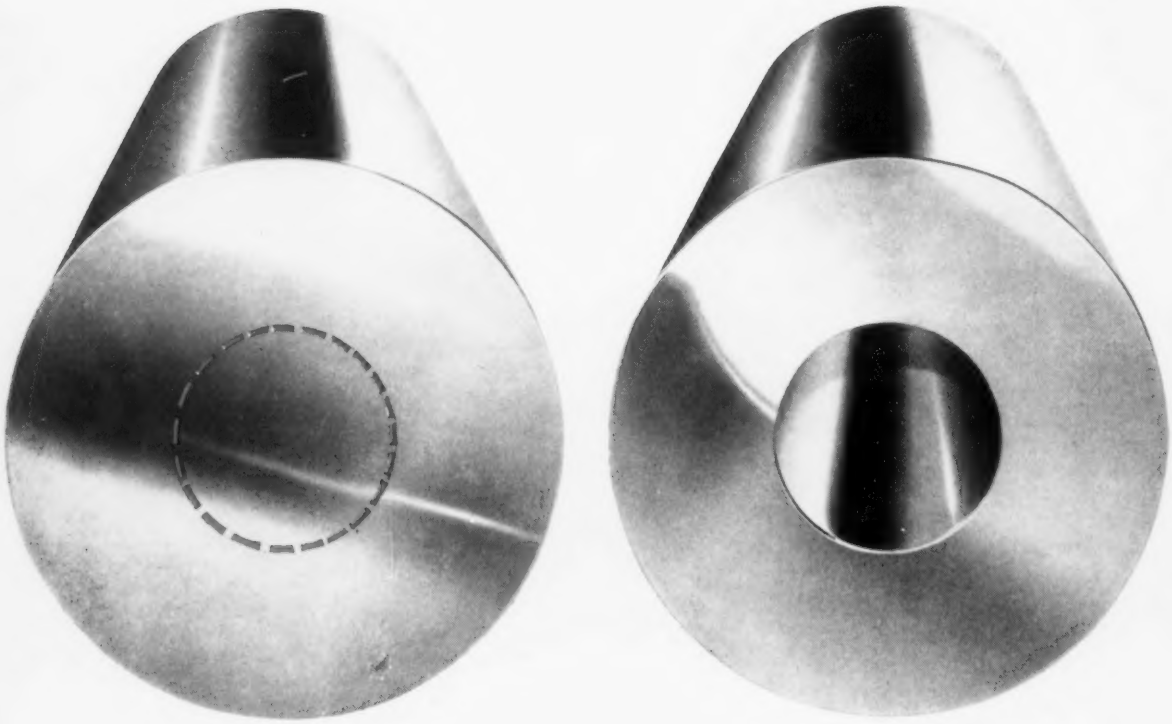

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